

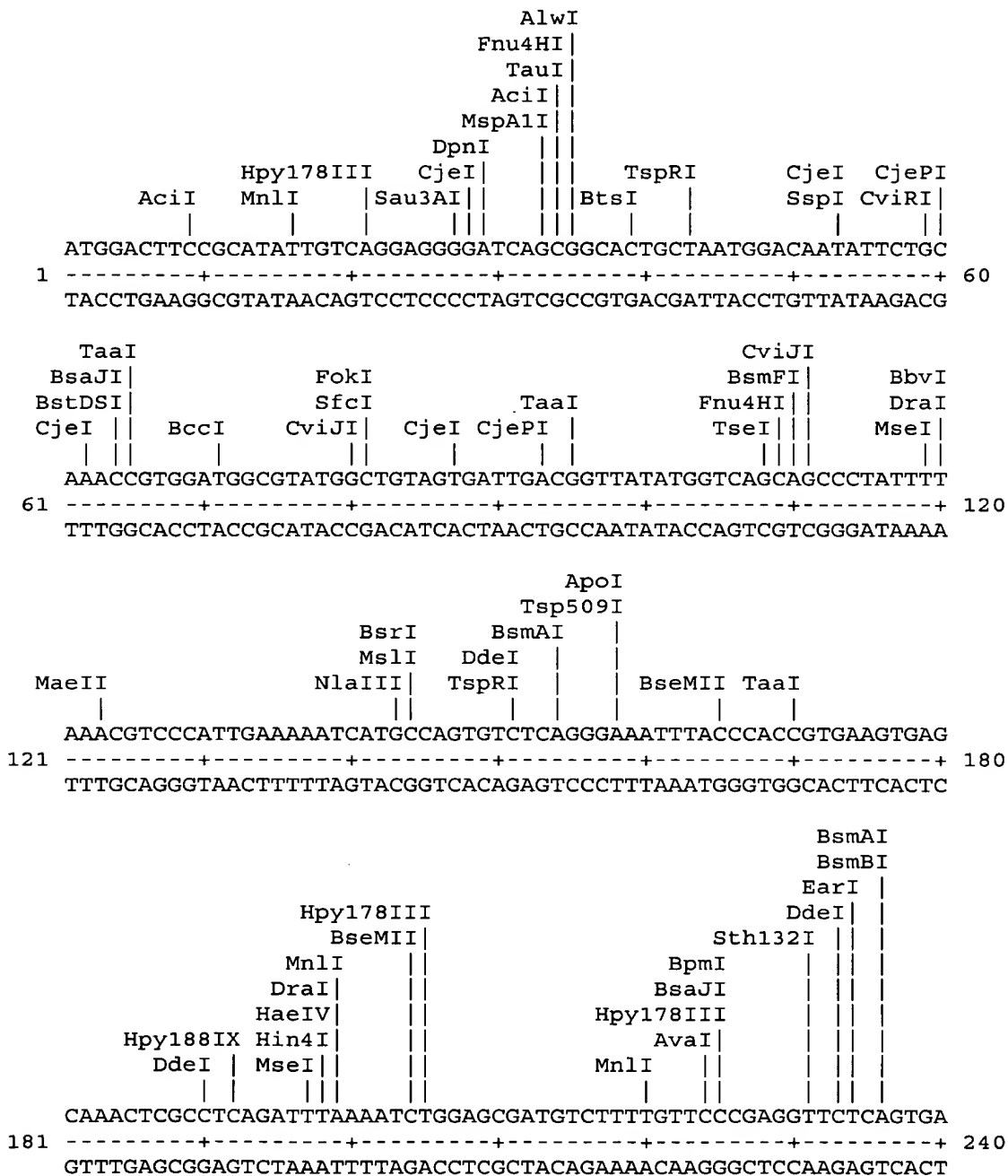


Title: Chlamydia Antigens and
Corresponding DNA Fragments and Uses
Thereof

Inventor(s): Andrew D. MURDIN et al.
Appl. No.: 09/868,987

Figure 1A

Restriction enzyme analysis of CPN100686 (RY 54 - SEQ ID NO. 1)

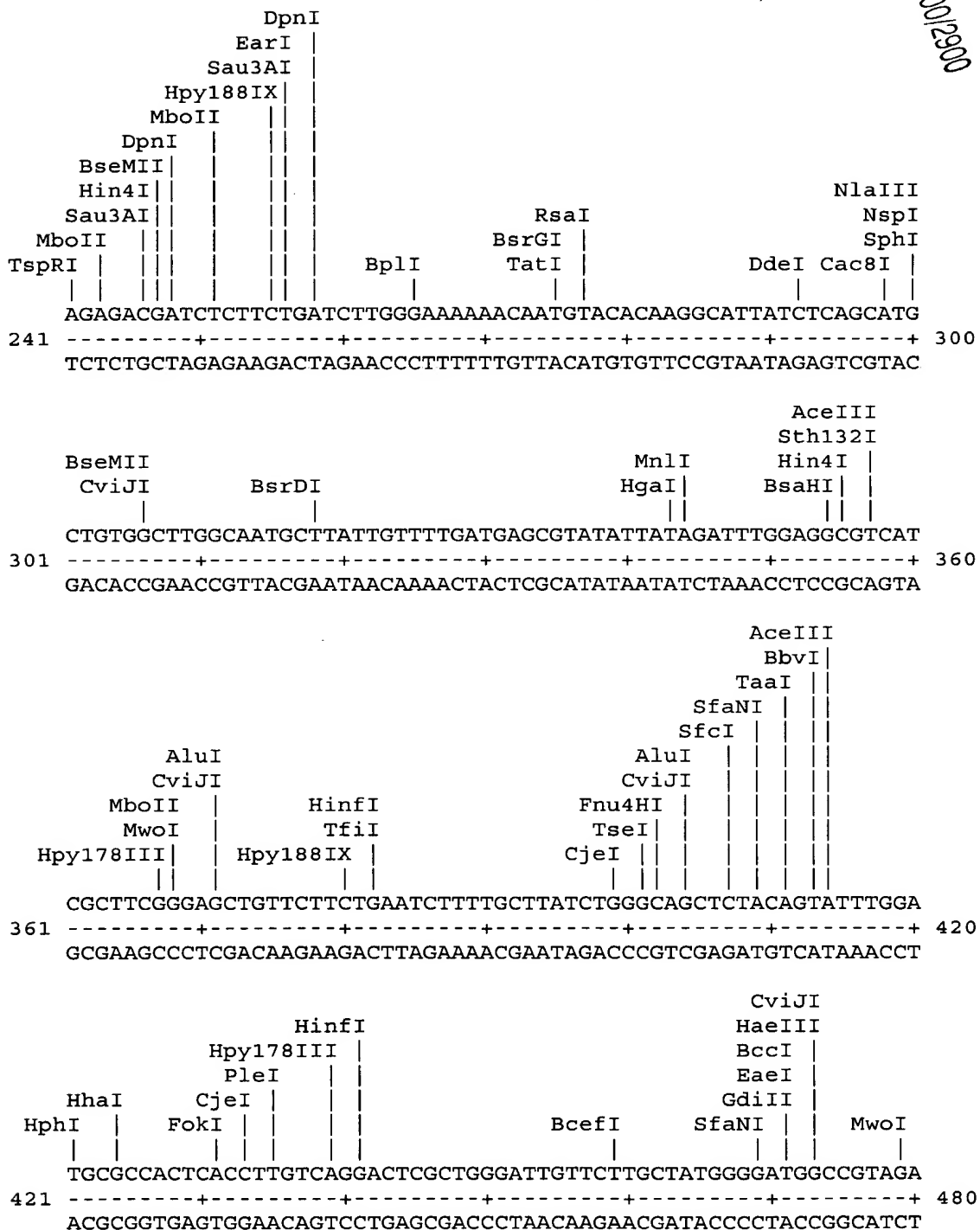


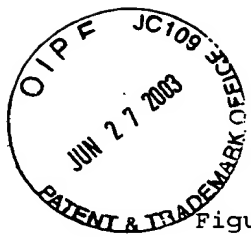


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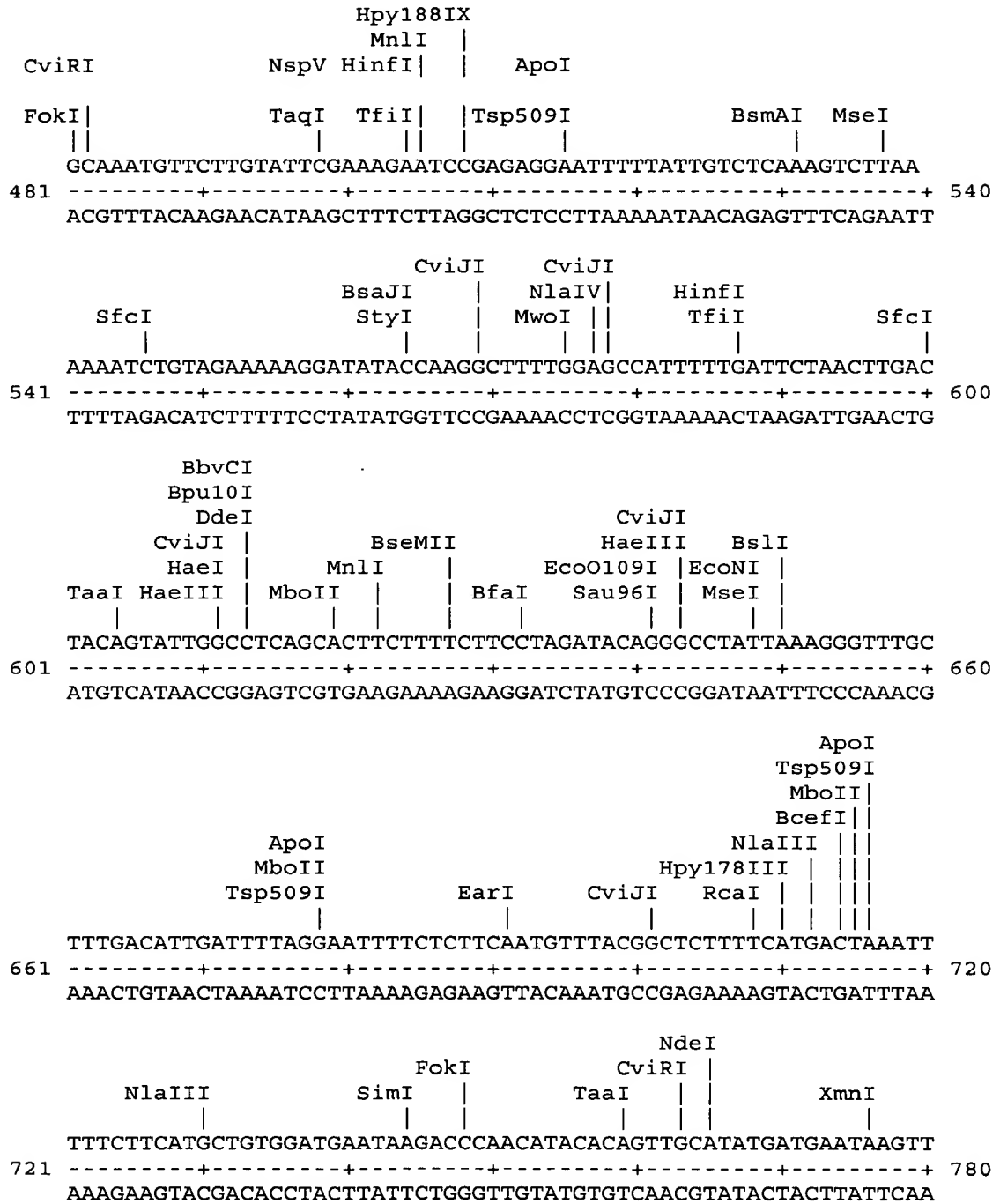
Figure 1B

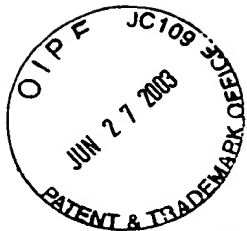




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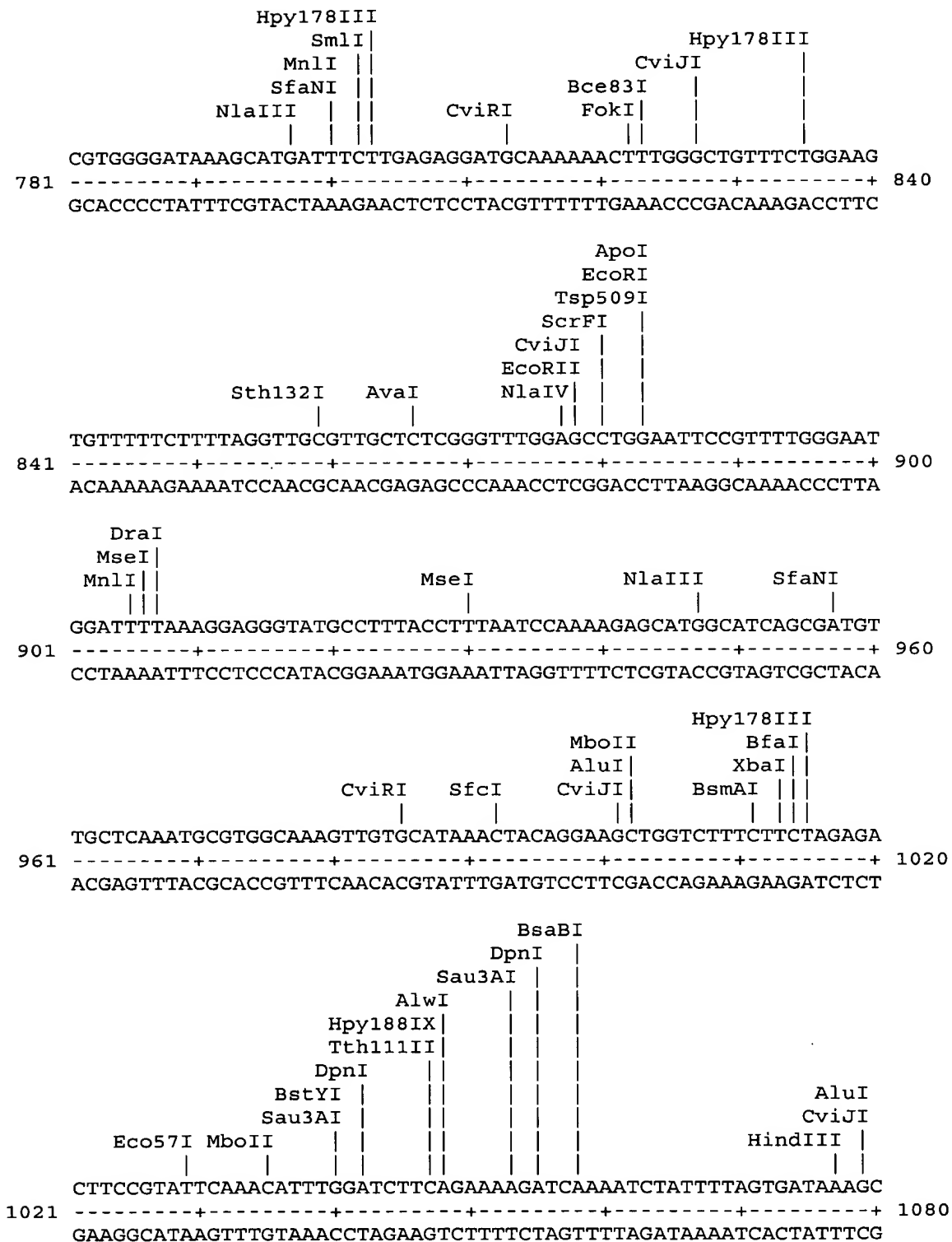
Figure 1C





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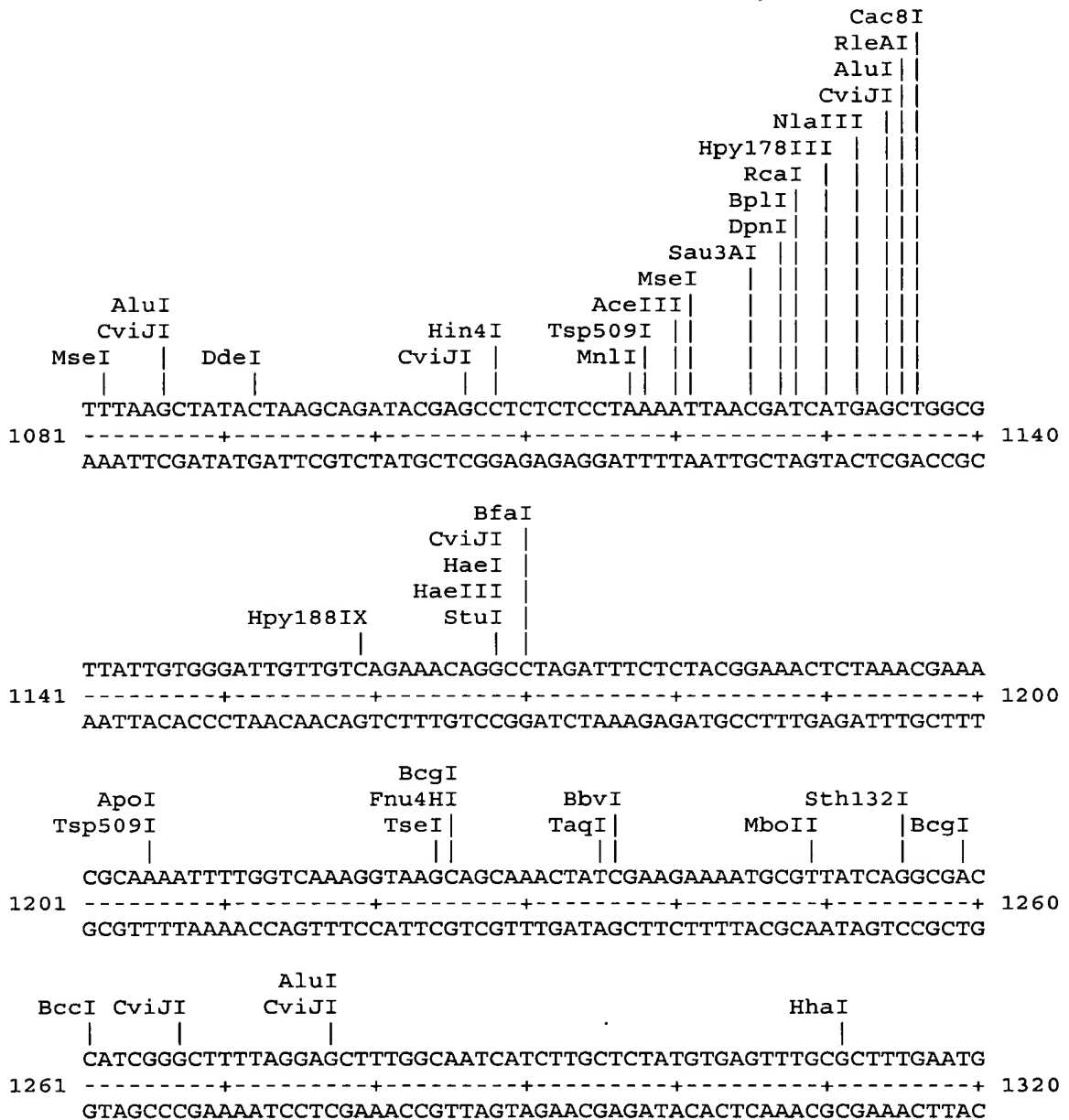
Figure 1D

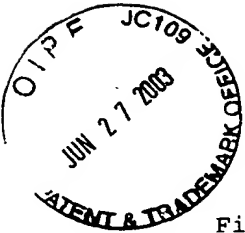




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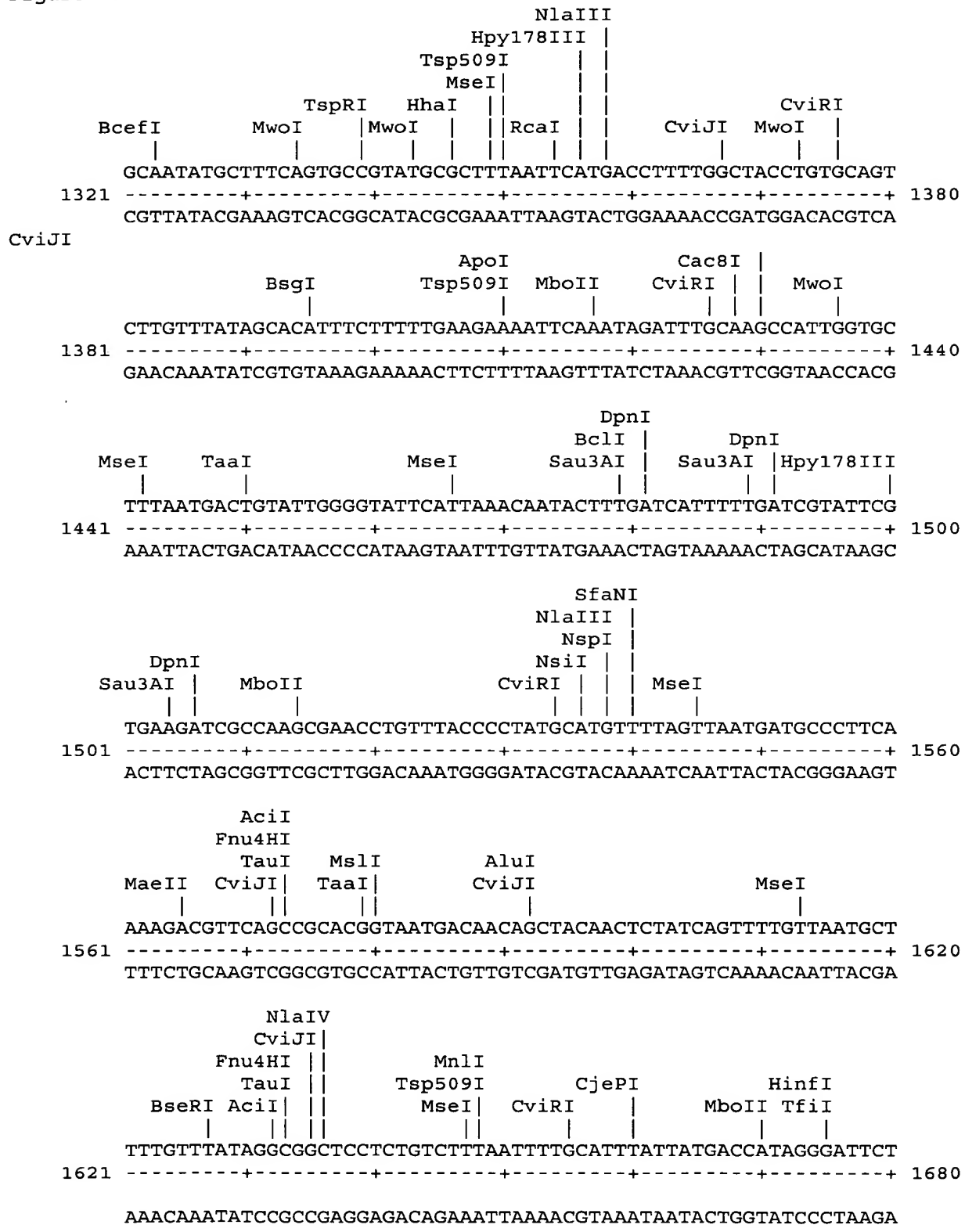
Figure 1E

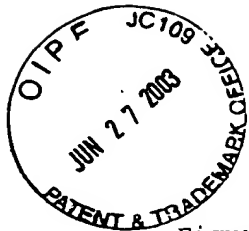




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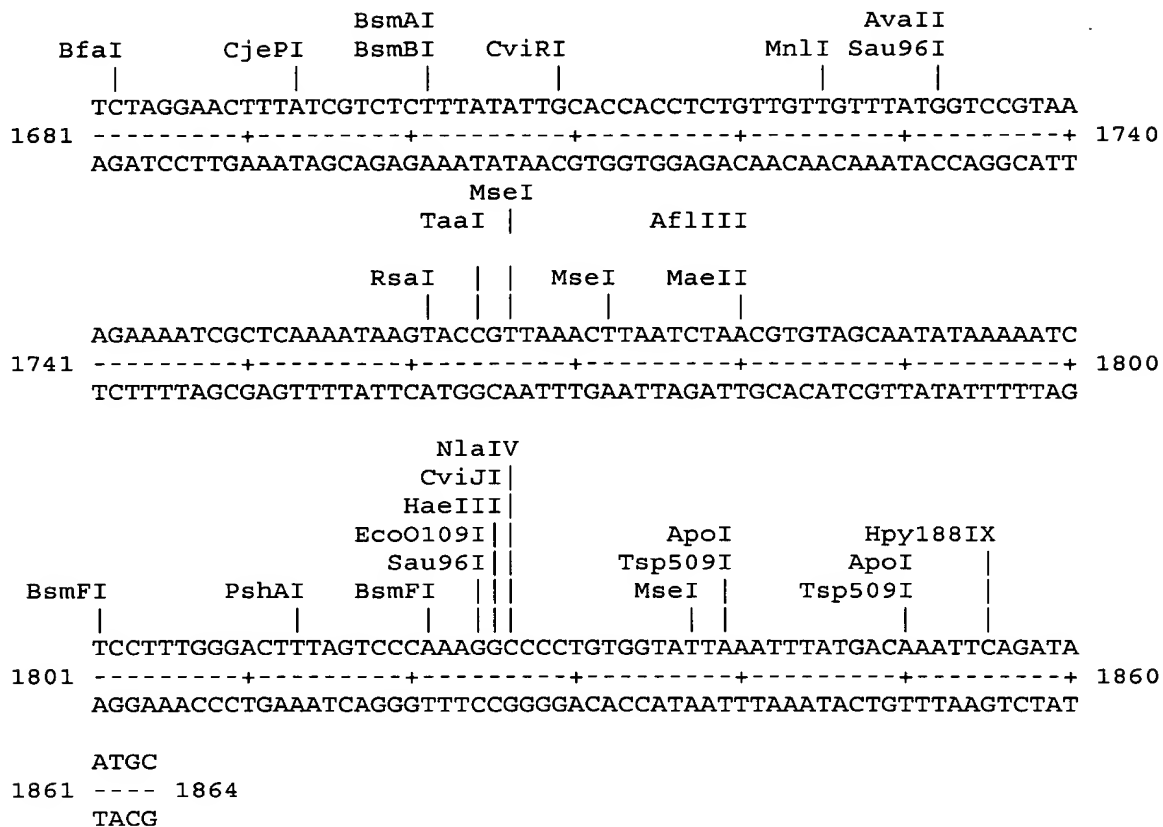
Figure 1F

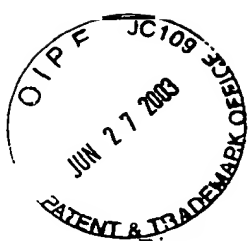




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Figure 1G

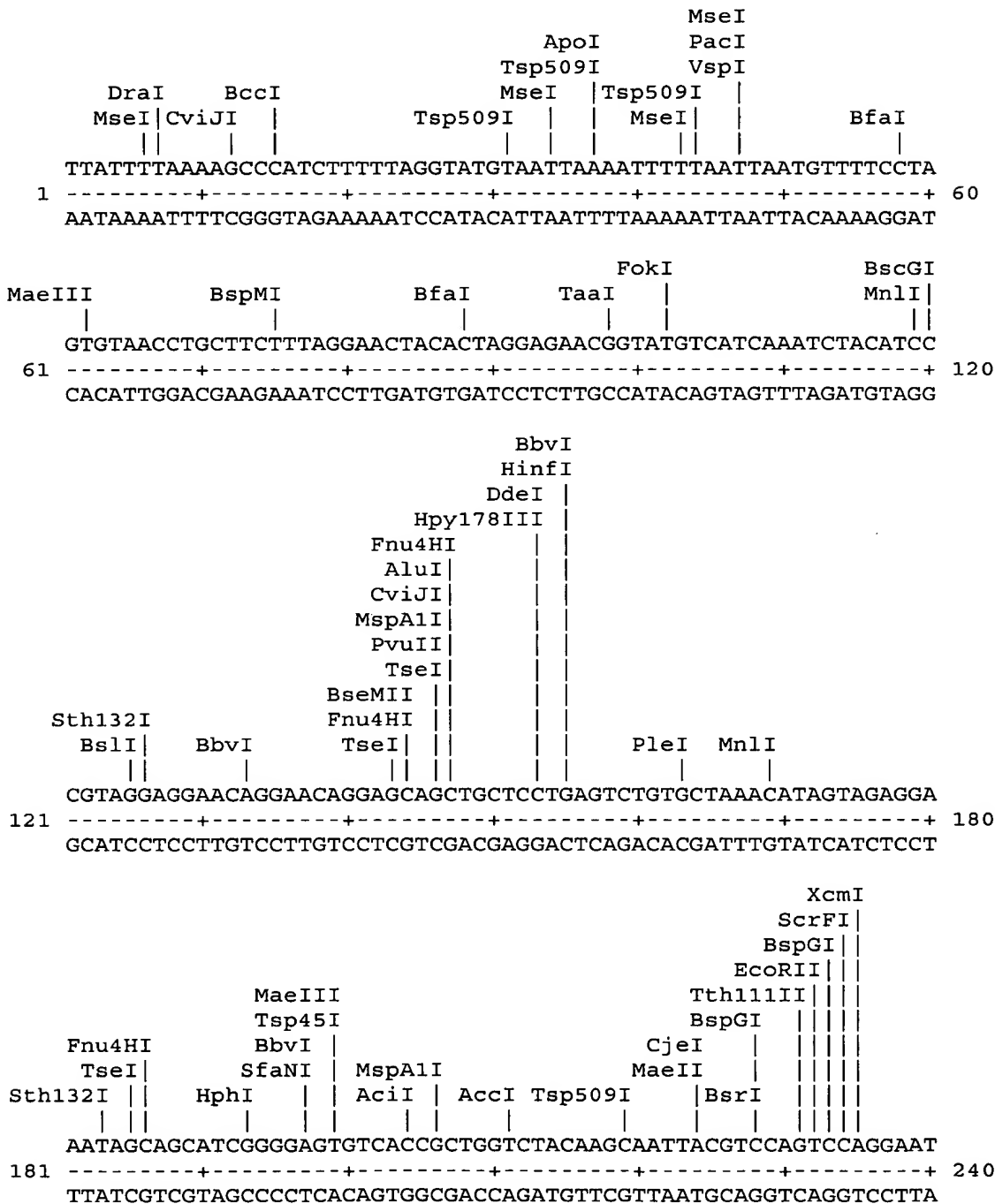




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Thereof
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Figure 2A

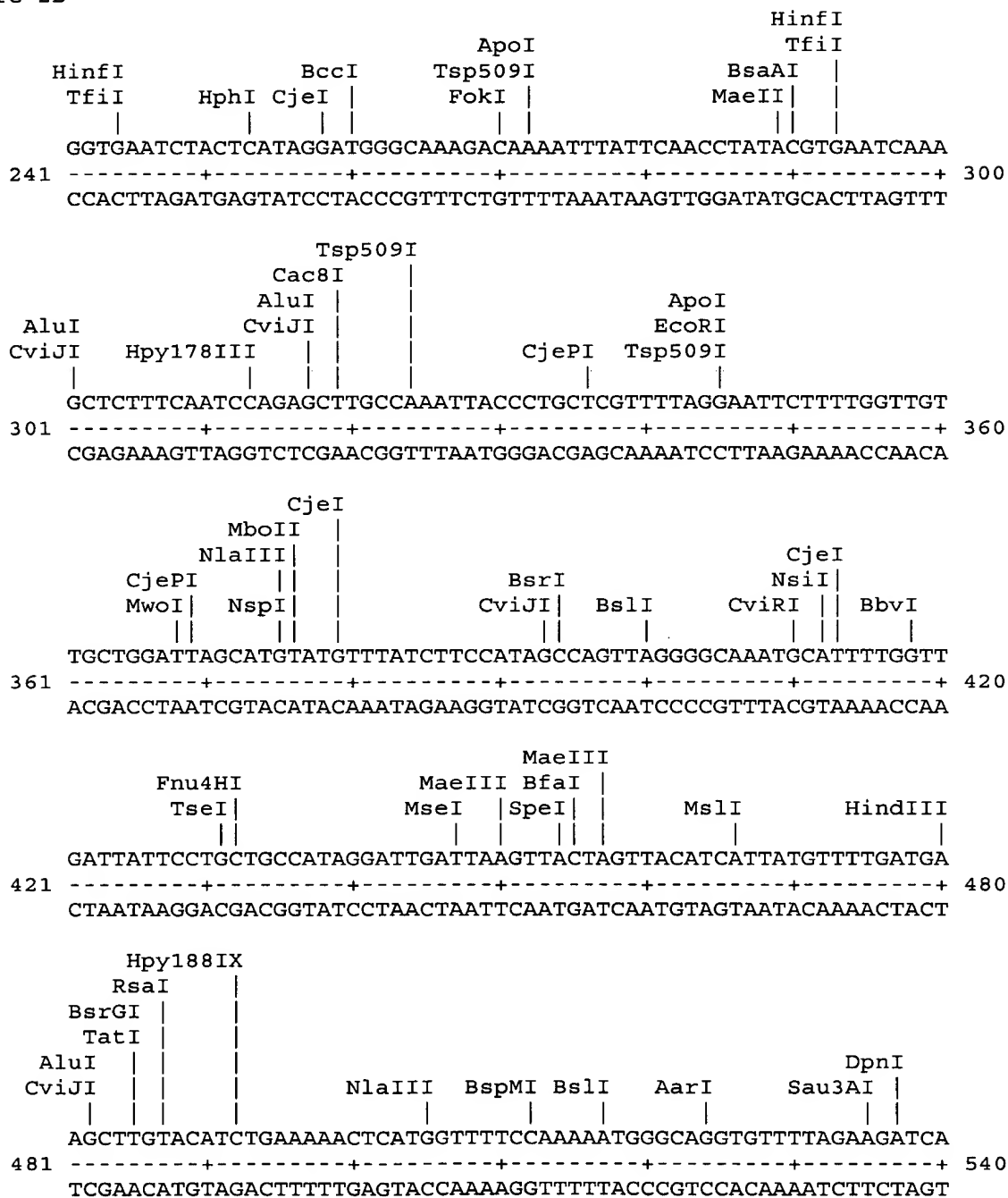
Restriction enzyme analysis of CPN100696 (RY 55 - SEQ ID NO. 2)





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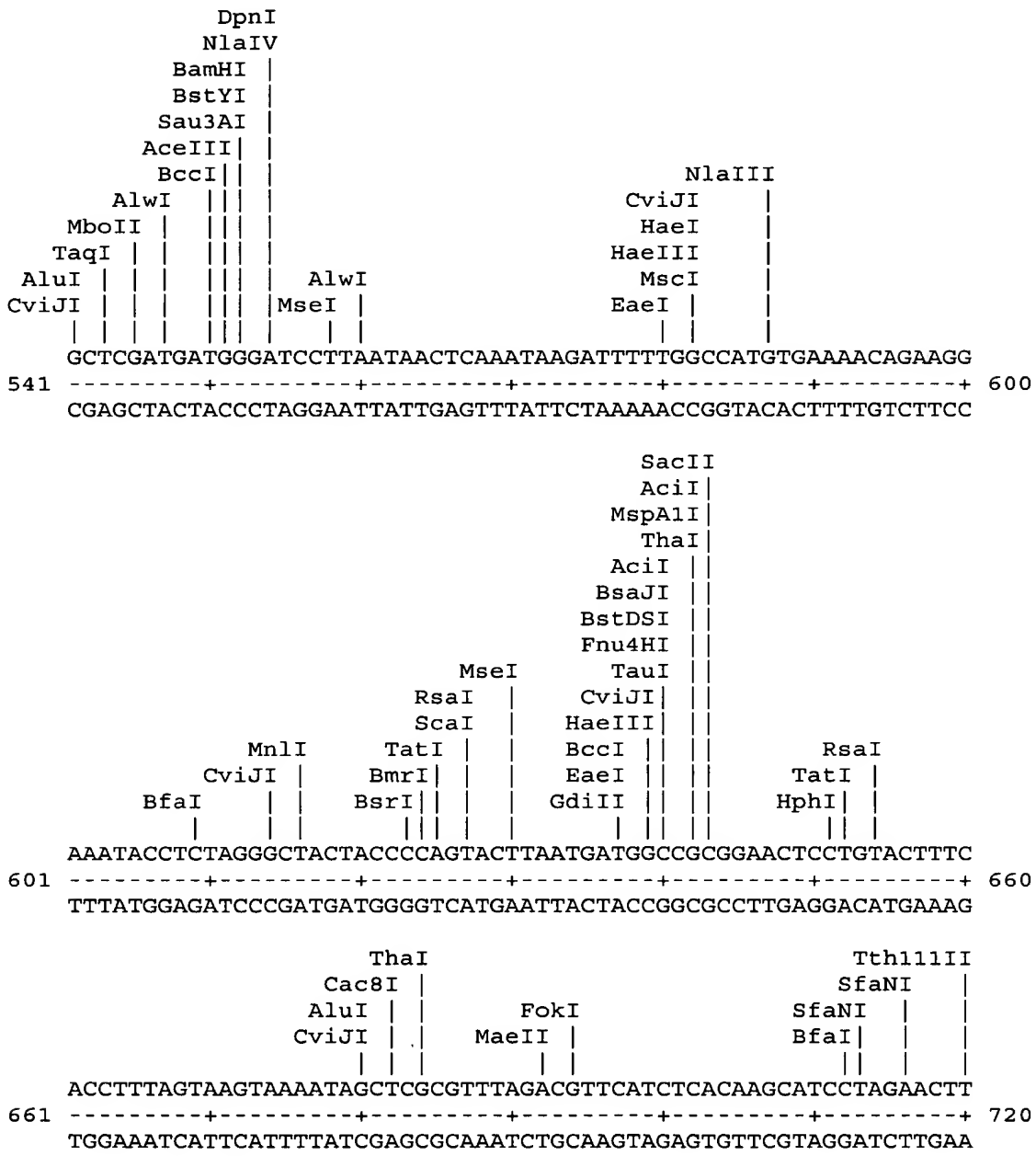
Figure 2B

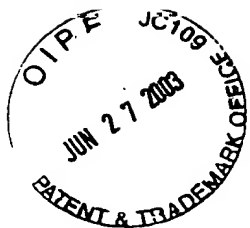




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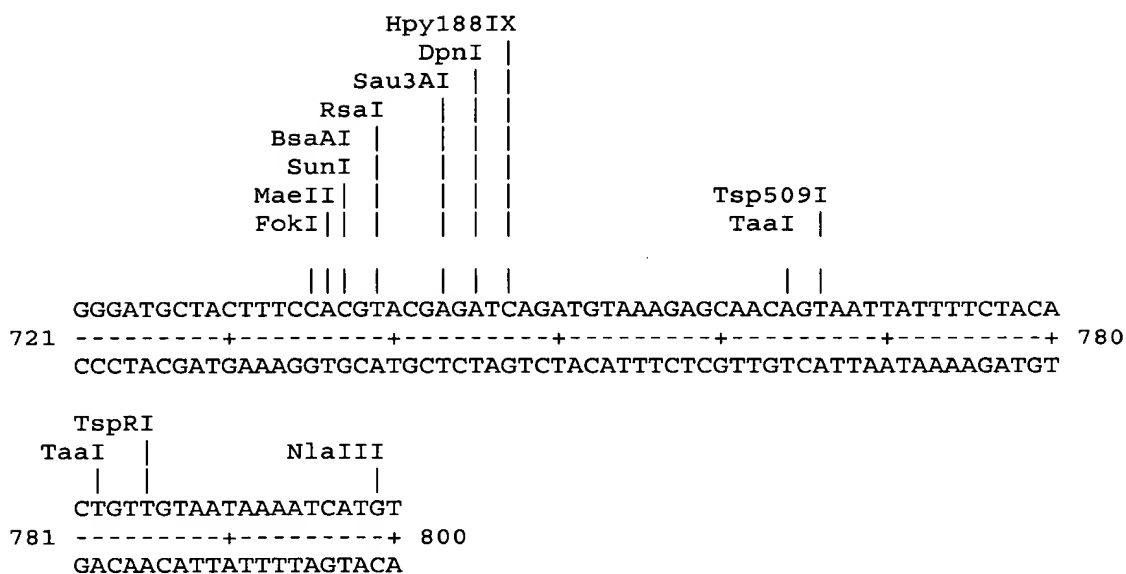
Figure 2C

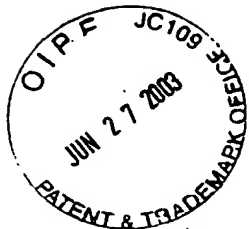




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Figure 2D

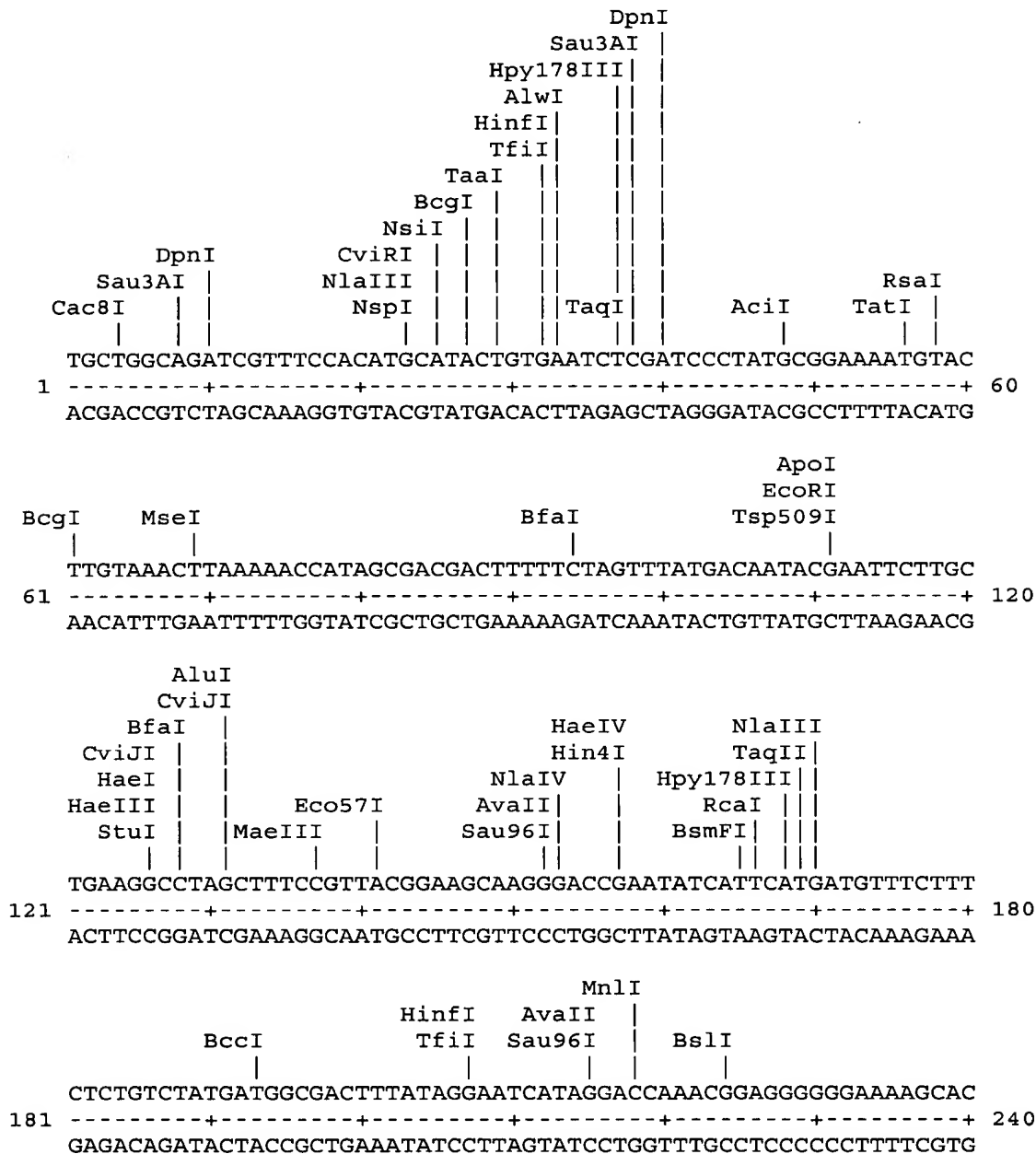


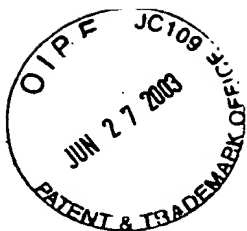


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Figure 3A

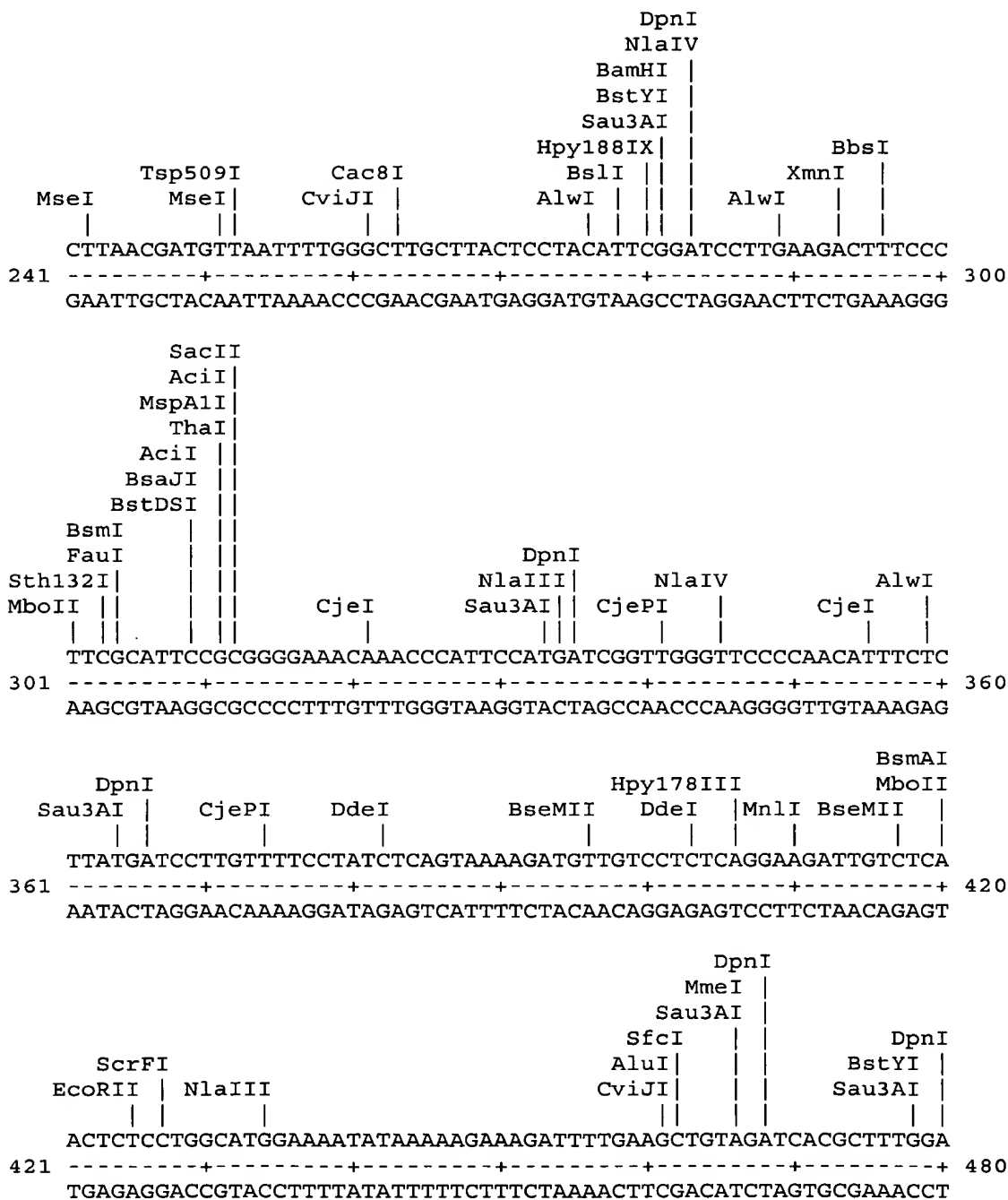
Restriction enzyme analysis of CPN100709 (RY 57 - SEQ ID NO. 3)

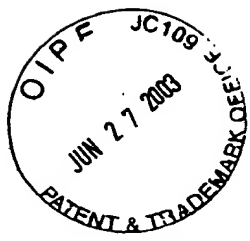




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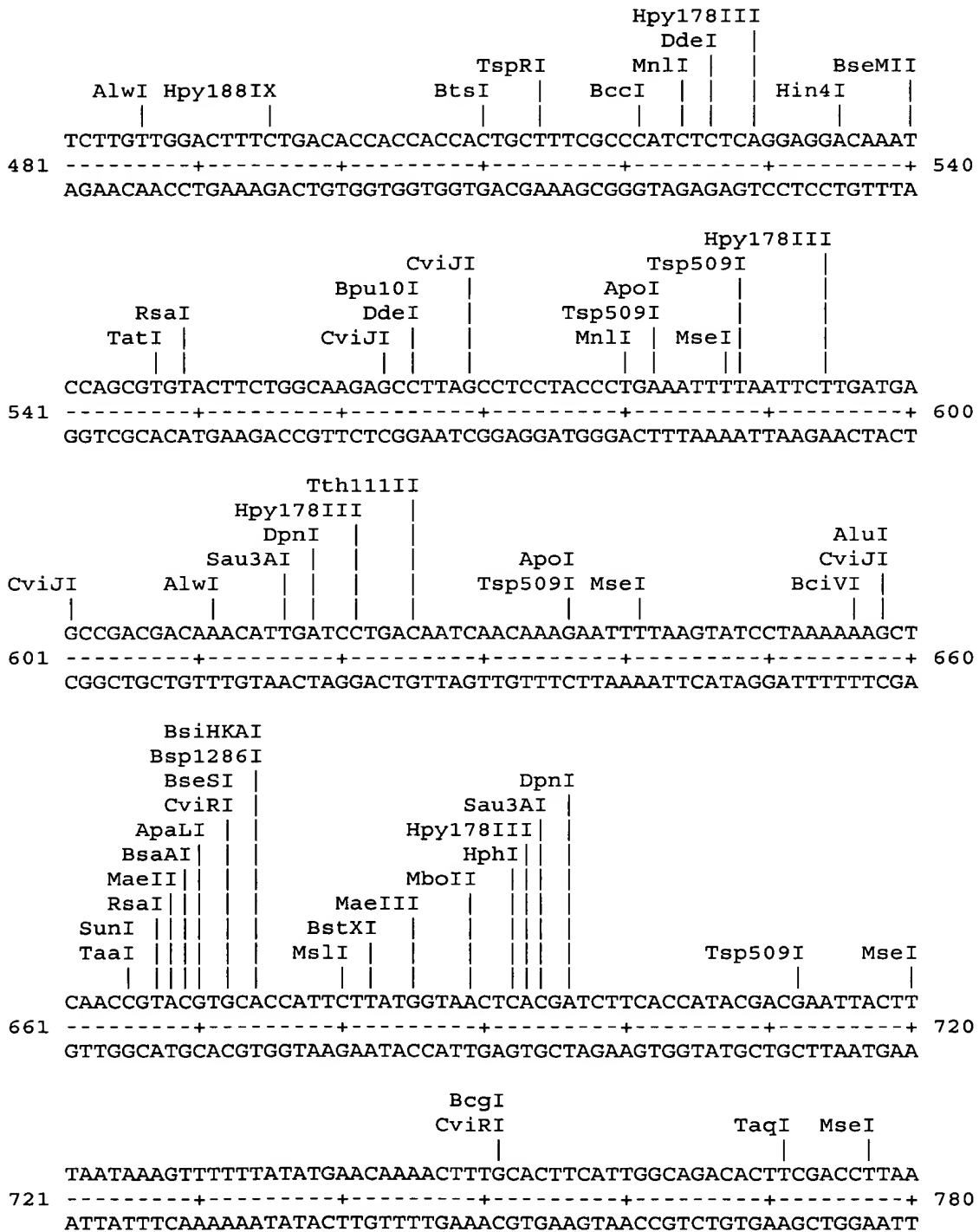
Figure 3B





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Thereof
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Figure 3C



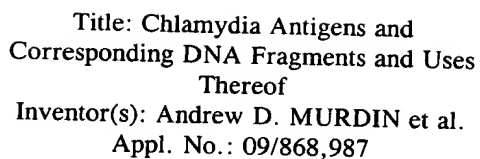
[illegible]

Figure 4A
Restriction enzyme analysis of CPN100710 (RY 58 - SEQ ID NO. 4)

XmnI DpnI
 ApoI Sau3AI
 Tsp509I HphI DdeI Acil DdeI Tsp509I
 MseI
 1 -----+-----+-----+-----+-----+-----+-----+-----+-----+ 60
 GAGAATTTTTTCTAAGATCACCGCTTCTTAGGATATTCGTTCTTTATTAAAATTATGCC
 CTCTTAAAAAAGGATTCTAGTGGCGAAGAATCCTATAAGCAAGAAATAATTTTAATACGG

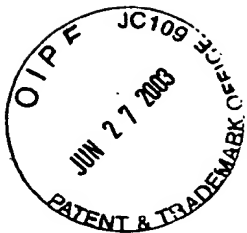
 DpnI NsiI
 Sau3AI CviRI
 NlaIII
 61 -----+-----+-----+-----+-----+-----+-----+-----+ 120
 CCAATAGAATAATAGATCATCTTATCAAACCTGCTTTTGTCTATGCATAAAGTAATAGTTTT
 GGTATCTTATTATCTAGTAGAATAGTTTGACGAAAACAGTACGTATTTTCATTATCAAAA

 MseI CviJI
 121 -----+-----+-----+-----+-----+-----+-----+-----+ 180
 CATTTTCCTTACCCTATATTCGTTAAAAAGTTATGGGAATGATGTAATAGATAAGCCCCA
 GTAAAAGGAATGGGATATAAGCAATTTTCAATACCCTTACTACATTATCTATTCGGGGT

 BsaI
 BsmAI
 NlaIII ApoI Tsp509I BfaI Tsp509I EarI
 181 -----+-----+-----+-----+-----+-----+-----+-----+ 240
 TGTTCTTGTCAGTATCGCCCCCTATAAATTCCTAGTTGAACAAATTGCTGAAGAGACCTG
 ACAAGAACAGTCATAGCGGGGGATATTTAAGGATCAACTTGTTTAACGACTTCTCTGGAC

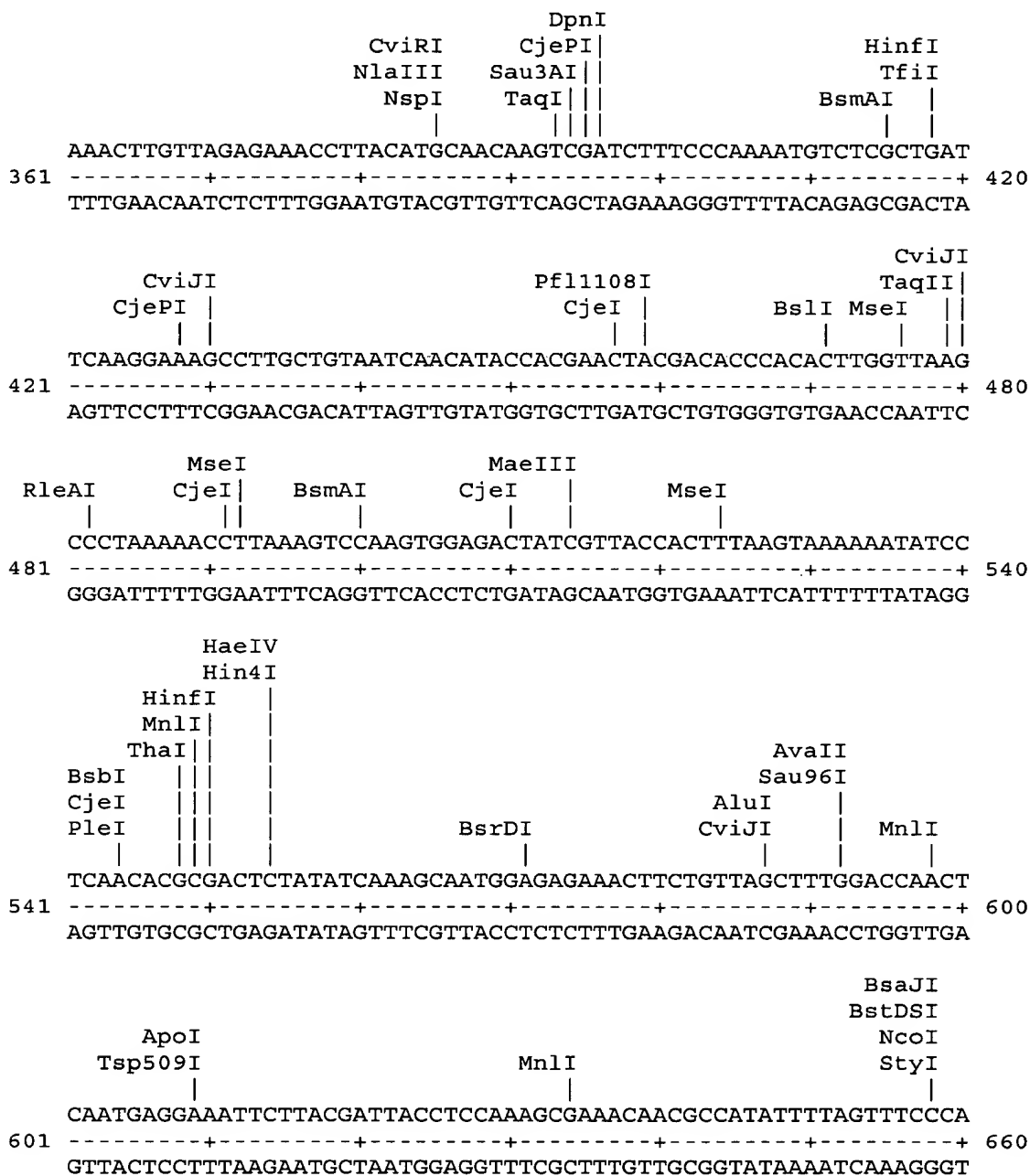
 DpnI
 Sau3AI
 AlwI
 HinfI BseRI BbvCI
 TfiI MslI Bpu10I
 MboII Eco57I MaeIII DdeI
 241 -----+-----+-----+-----+-----+-----+-----+-----+ 300
 TTTTGTCTATGCGATAGTTACGAATCACTATGATCCCCATACCTATGAACTTCCTCCTCA
 AAAACAGATACGCTATCAATGCTTAGTGATACTAGGGGTATGGATACTTGAAGGAGGAGT

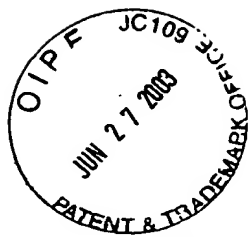
 MaeIII
 BseMII
 MnlI BsaI
 MnlI BsmAI NlaIV DrdII MnlI
 301 -----+-----+-----+-----+-----+-----+-----+-----+ 360
 GCAAATCAAGGAGTTACGACAAGGAGACCTTTGGTTCCGTATAGGAGAGGCATTGAAAA
 CGTTTAGTTTCCTCAATGCTGTTTCCTCTGGAAACCAAGGCATATCCTCTCCGTAAACCTTT



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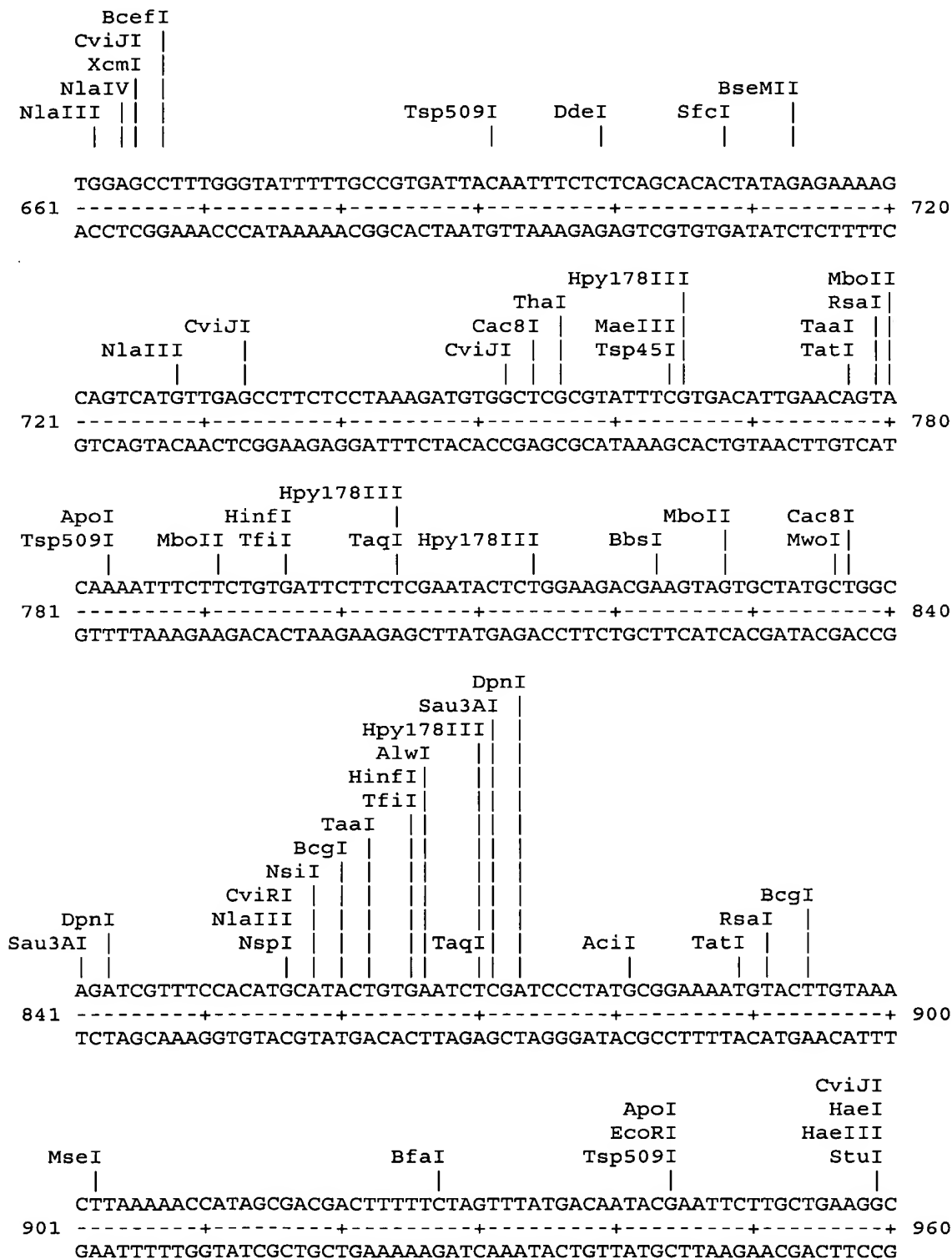
Figure 4B

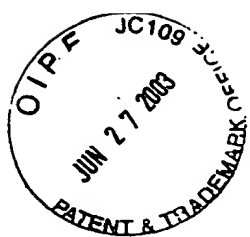




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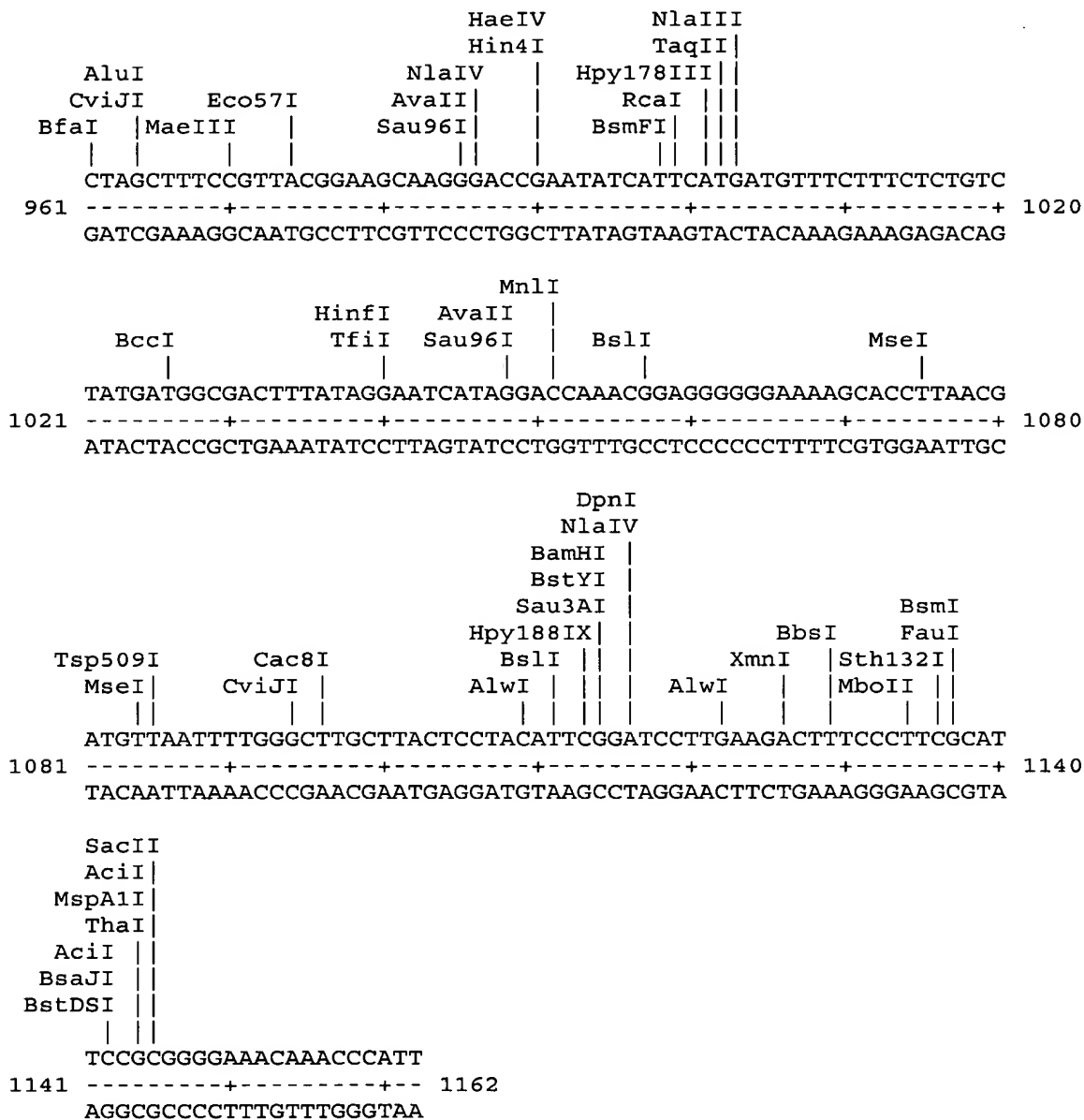
Figure 4C

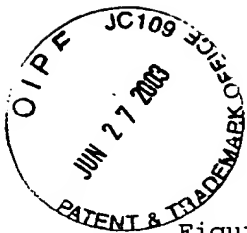




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Figure 4D

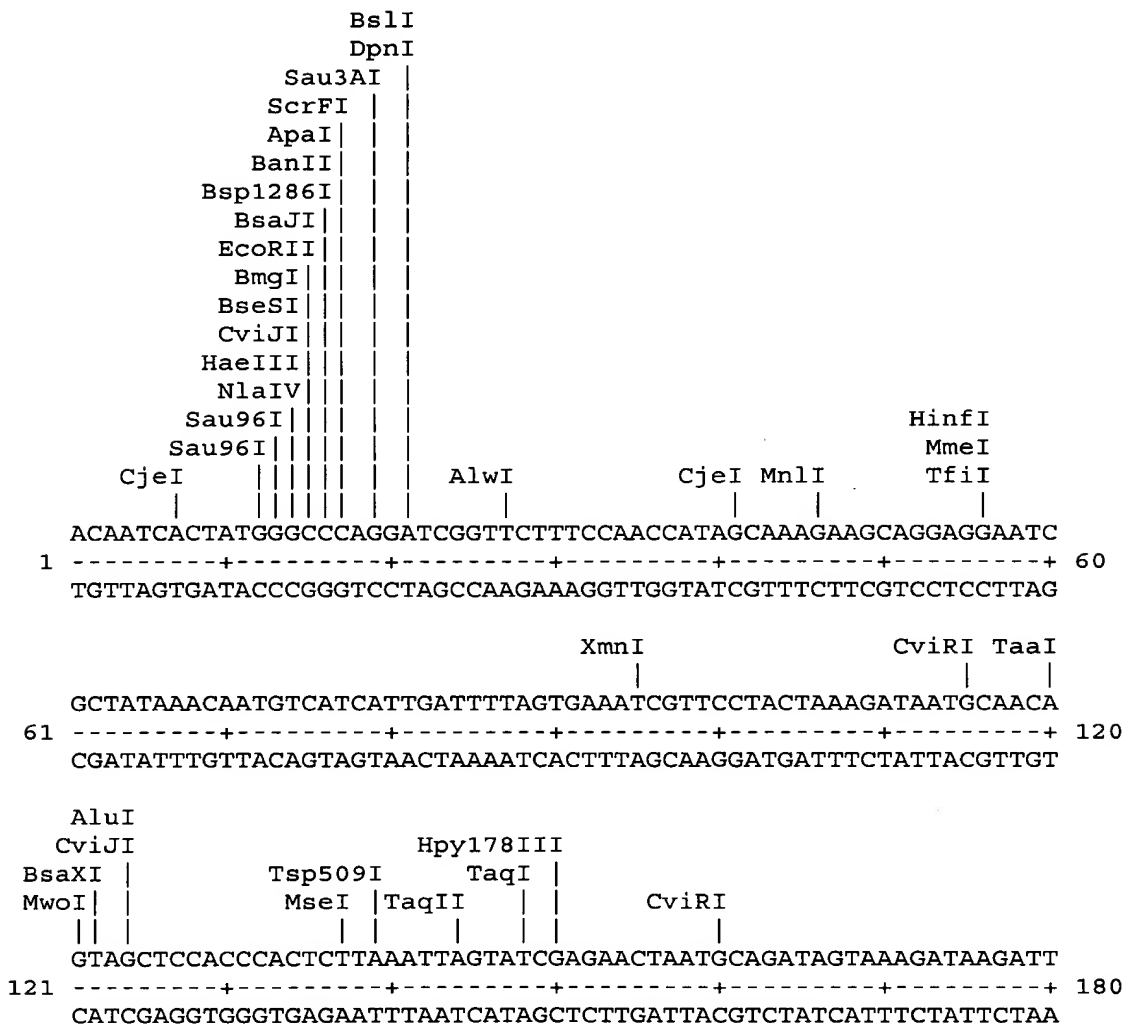


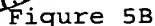


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Figure 5A

Restriction enzyme analysis of CPN100711 (RY 59 - SEQ ID NO. 5)





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DpnI
 BstYI
 Sau3AI
 EarI
 Hpy178III
 HinfI
 PpiI
 MaeIII
 TaaI
 Tsp45I
 AlwNI
 MboII
 PleI
 BfaI
 XbaI
 AlwI
 ApoI
 Tsp509I

181 GATATTACAGGAAGTGTGACTCTTCTAGATCCTAATGGCAACTTATATCAAAATTCTTAT 240
 -----+-----+-----+-----+-----+-----+-----+-----+
 CTATAATGTCCTTGACACTGAGAAGATCTAGGATTACCGTTGAATATAGTTTAAAGAATA

MboII
 EcoRV
 HphI
 BbsI
 ThaI
 AciI
 Tsp509I
 CviRI
 MwoI
 MaeIII

241 CTTGGTGAAGACCGCGATATCACTCTTTTCAATATAGACAATTCTGCAAGTGGGGCAGTT 300
 -----+-----+-----+-----+-----+-----+-----+-----+
 GAACCACTTCTGGCGCTATAGTGAGAAAAGTTATATCTGTTAAGACGTTACCCCCGTCAA

HphI
 CviJI
 MwoI
 MaeIII
 Tsp45I
 ApoI
 BslI
 Tsp509I
 AluI
 CviJI
 ScrFI
 EcoRII
 NlaIV

301 ACAGCCACGAATGTCACCCTTCAAGGGAATTTAGGAGCTAAAAAAGGATATTTAGGAACC 360
 -----+-----+-----+-----+-----+-----+-----+-----+
 TGTCTGGTGCCTTACAGTGGGAAGTTCCCTTAAATCCTCGATTTTTTCCTATAAATCCTTGG

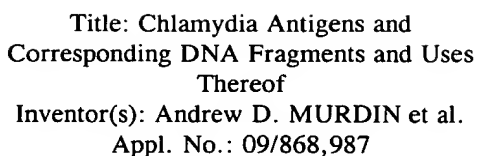


Diagram illustrating the restriction enzyme sites for the *Salmonella enterica* serovar *Agona* genome. The DNA sequence is shown in three segments, with restriction enzyme sites indicated by vertical lines and labels above the sequence.

Segment 1 (361-420):

Enzyme sites (from left to right): AlwI, ApoI, Tsp509I, BamHI, BstYI, Sau3AI, AlwI, ApoI, Tsp509I, MnlI, Tsp509I, MnlI, AvaII, Sau96I, CjeI.

DNA sequence (361-420):

361 TGGAAATTTGGATCCAAATTCCTCGGGTTCAAAAATTATTCTAAAATGGACCTTTGACAAA 420
-----+-----+-----+-----+-----+-----+-----+-----+
ACCTTAAACCTAGGTTTAAGGAGCCCAAGTTTTTAATAAGATTTTACCTGGAAACTGTTT

Segment 2 (421-480):

Enzyme sites (from left to right): CviJI, HaeIII, BspMI, Sau96I, Cac8I, HhaI, FokI, BsmAI, BfaI, CjeI, CjeI.

DNA sequence (421-480):

421 TACCTGCGCTGGCCCTACATCCCTAGAGACAACCACTTCTACATCAACTCTATTTGGGGA 480
-----+-----+-----+-----+-----+-----+-----+-----+
ATGGACGCGACCGGGATGTAGGGATCTCTGTTGGTGAAGATGTAGTTGAGATAAACCCCT

Segment 3 (481-540):

Enzyme sites (from left to right): BsiHKAI, Bsp1286I, MaeIII, Tsp45I, CjeI, TaaI, BsaJI, StyI, DrdII, DpnI, BstYI, Sau3AI, DdeI, NlaIII, AflIII, BspLU11I, AlwI, NspI, CviRI.

DNA sequence (481-540):

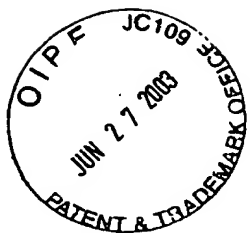
481 GCACAAACTCTTTAGTGAAGCAACCAAGGGATCTTAGGGAACATGTTGAACAATGCA 540
-----+-----+-----+-----+-----+-----+-----+-----+
CGTGTTTTGAGAAATCACTGACACTTGGTTCCTAGAAATCCCTTGTAACACTTGTTACGT

Segment 4 (541-600):

Enzyme sites (from left to right): AlwI, BstYI, Sau3AI, DpnI, CjeI, MboII, CviJI, CviJI, SfcI, BstYI, Sau3AI, DpnI, CjeI, Bsu36I, DdeI, AlwI.

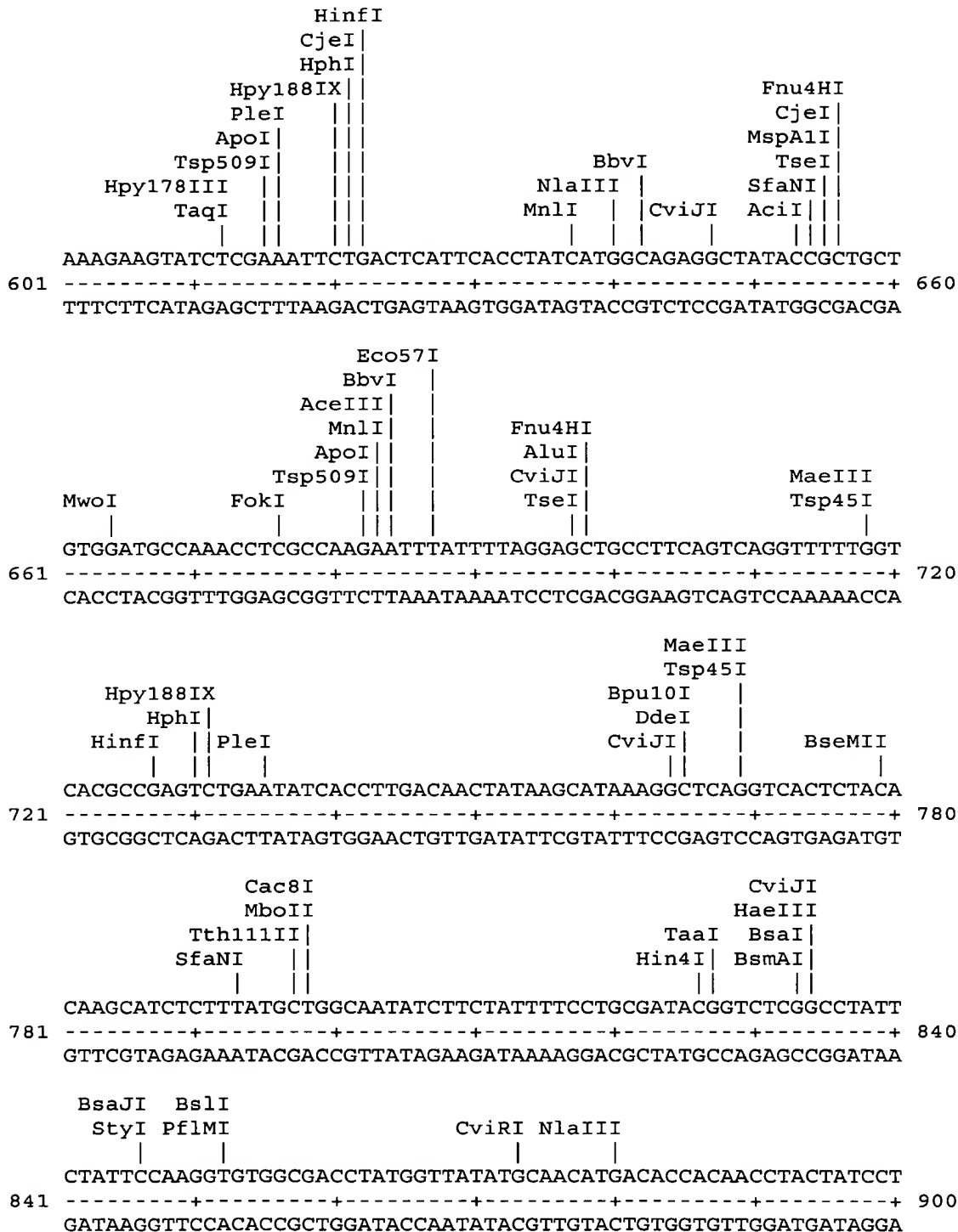
DNA sequence (541-600):

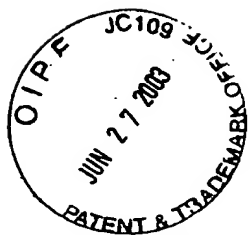
541 AGGTTTGAAGATCCTGCTTTCAACAACTTCTGGGCTTCGGCTATAGGATCTTTCCTTAGG 600
-----+-----+-----+-----+-----+-----+-----+-----+
TCCAAACTTCTAGGACGAAAGTTGTTGAAGACCCGAAGCCGATATCCTAGAAAGGAATCC



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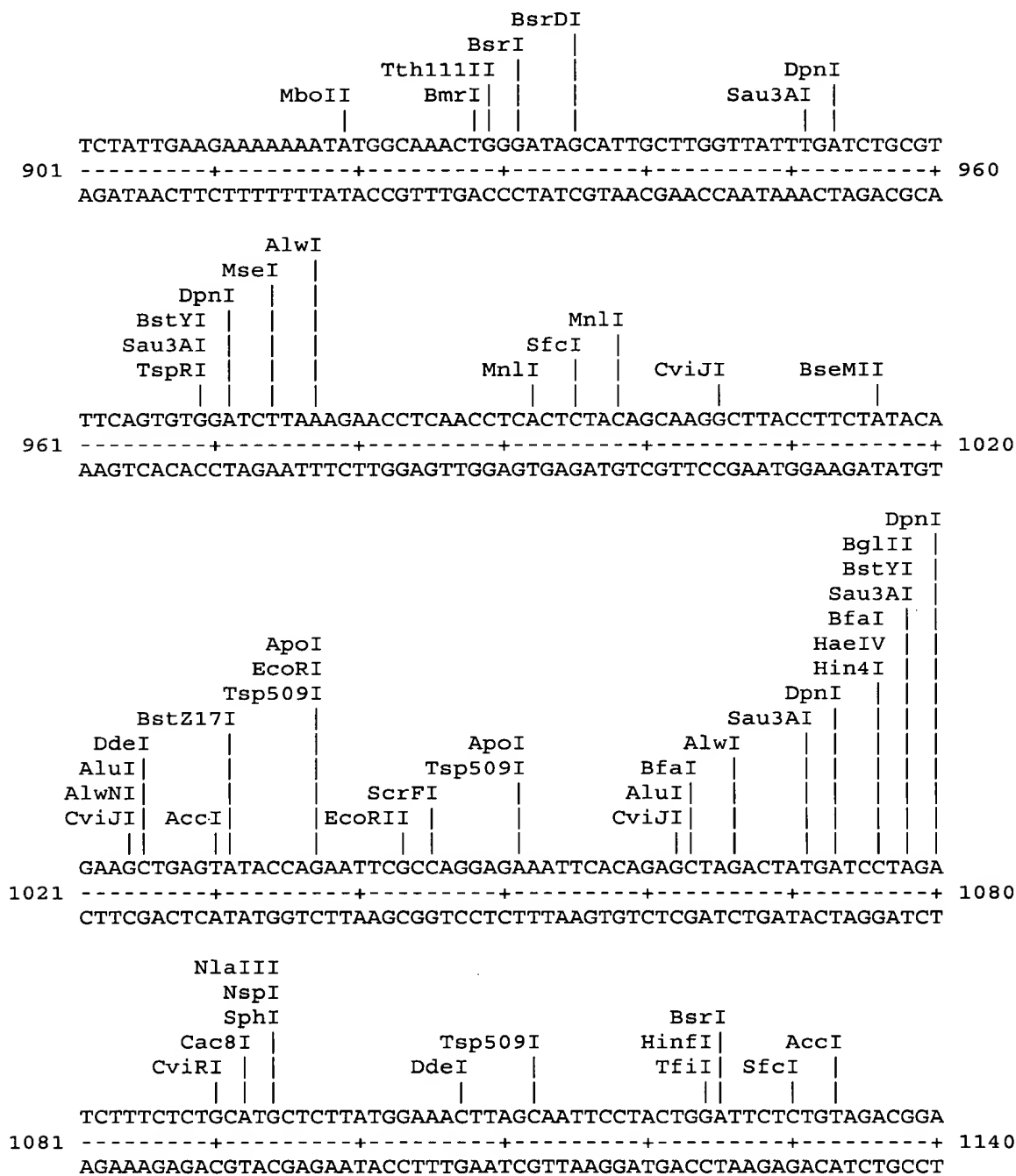
Figure 5D

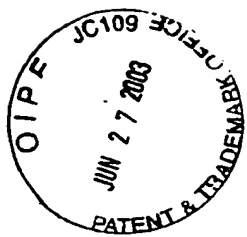




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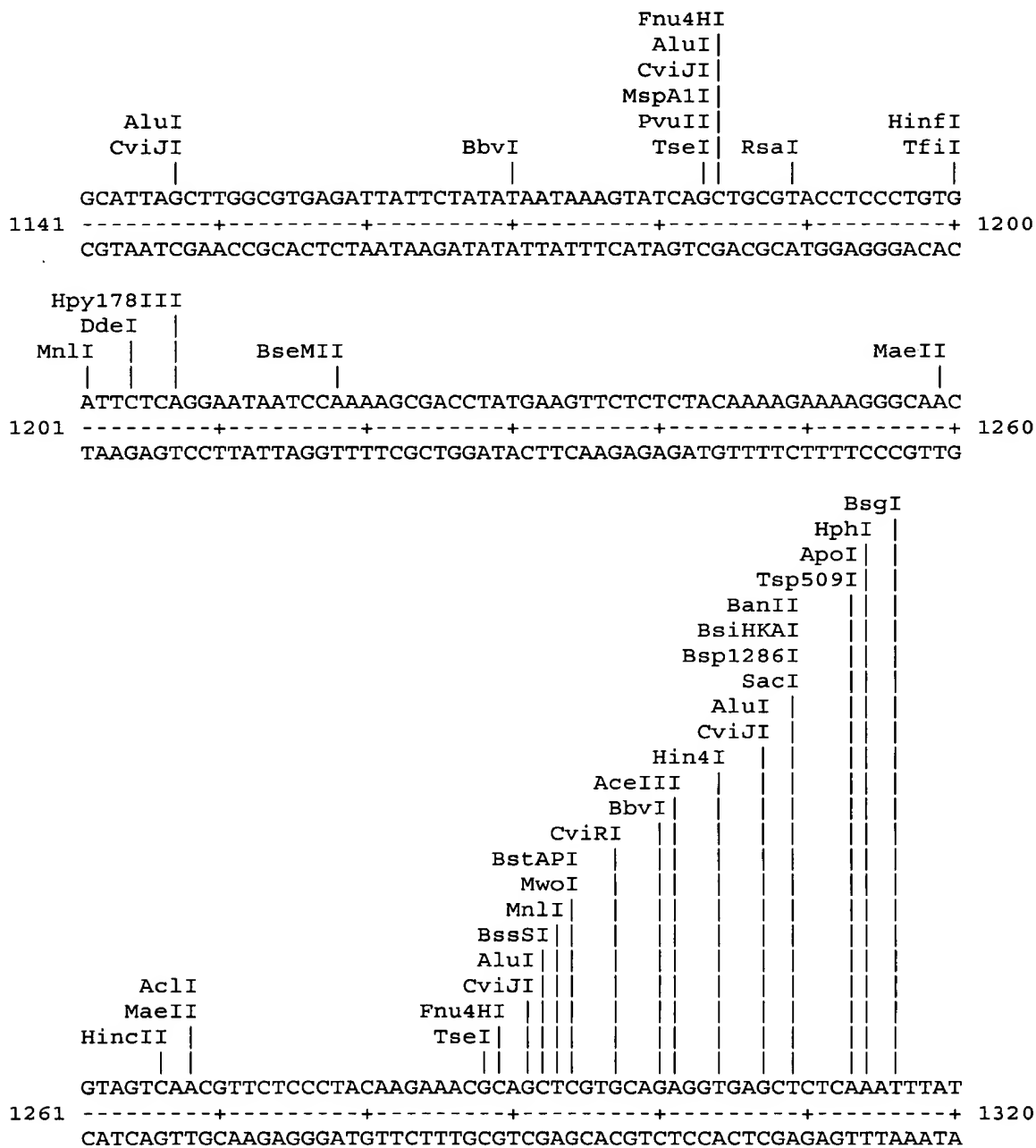
Figure 5E

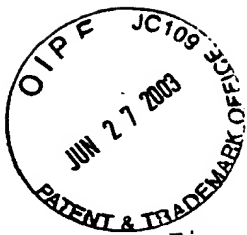




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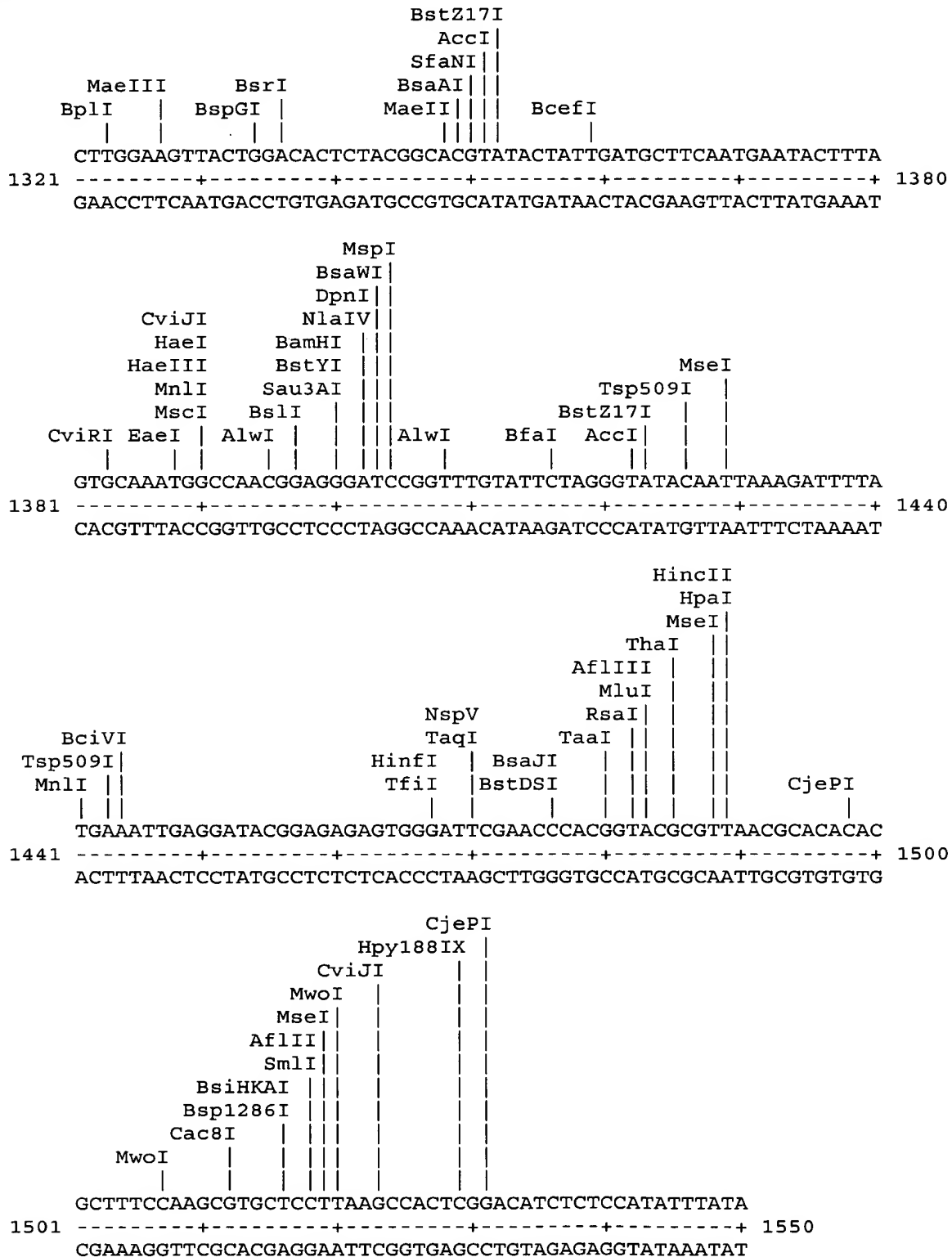
Figure 5F





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Figure 5G

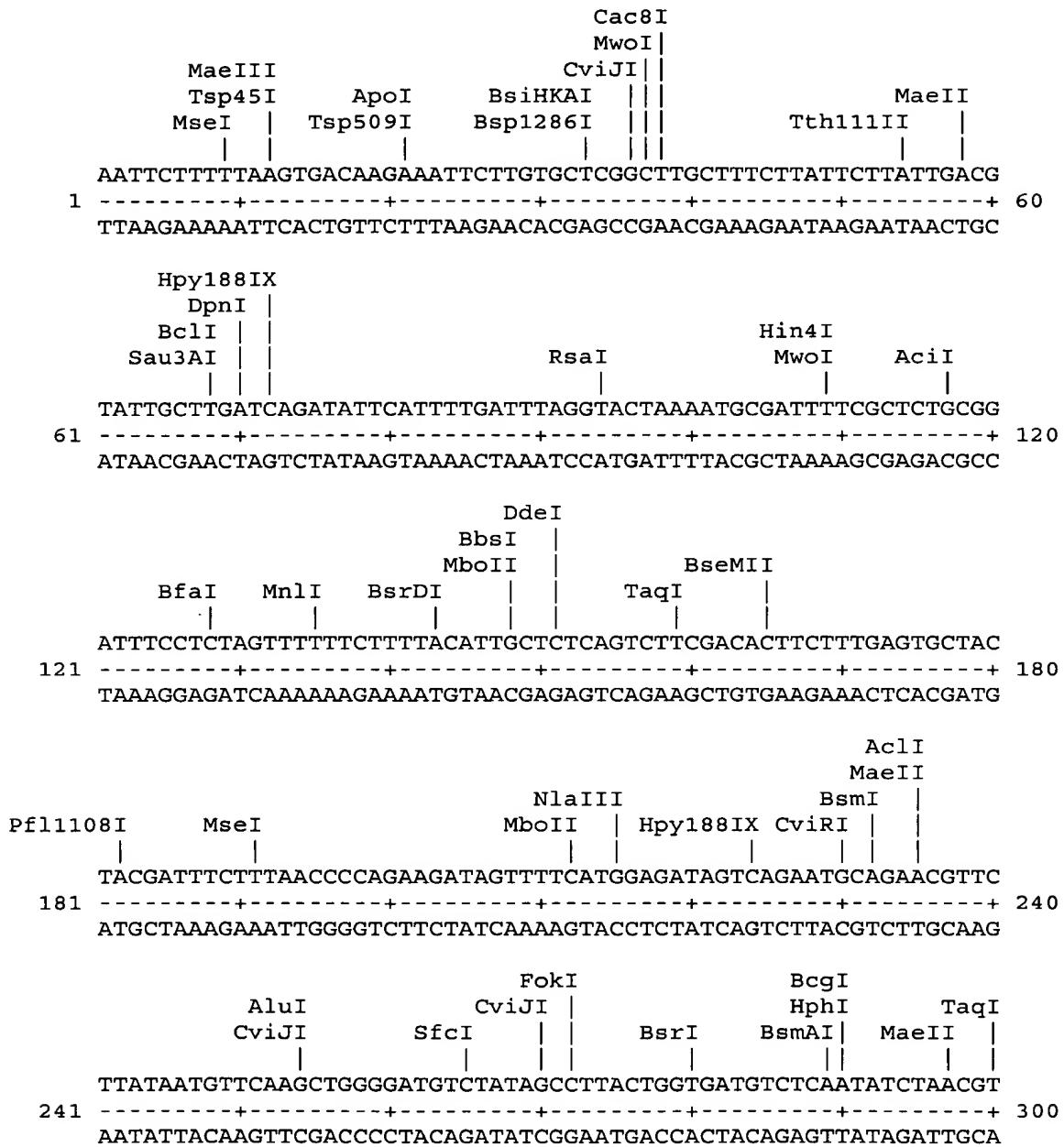




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Figure 6A

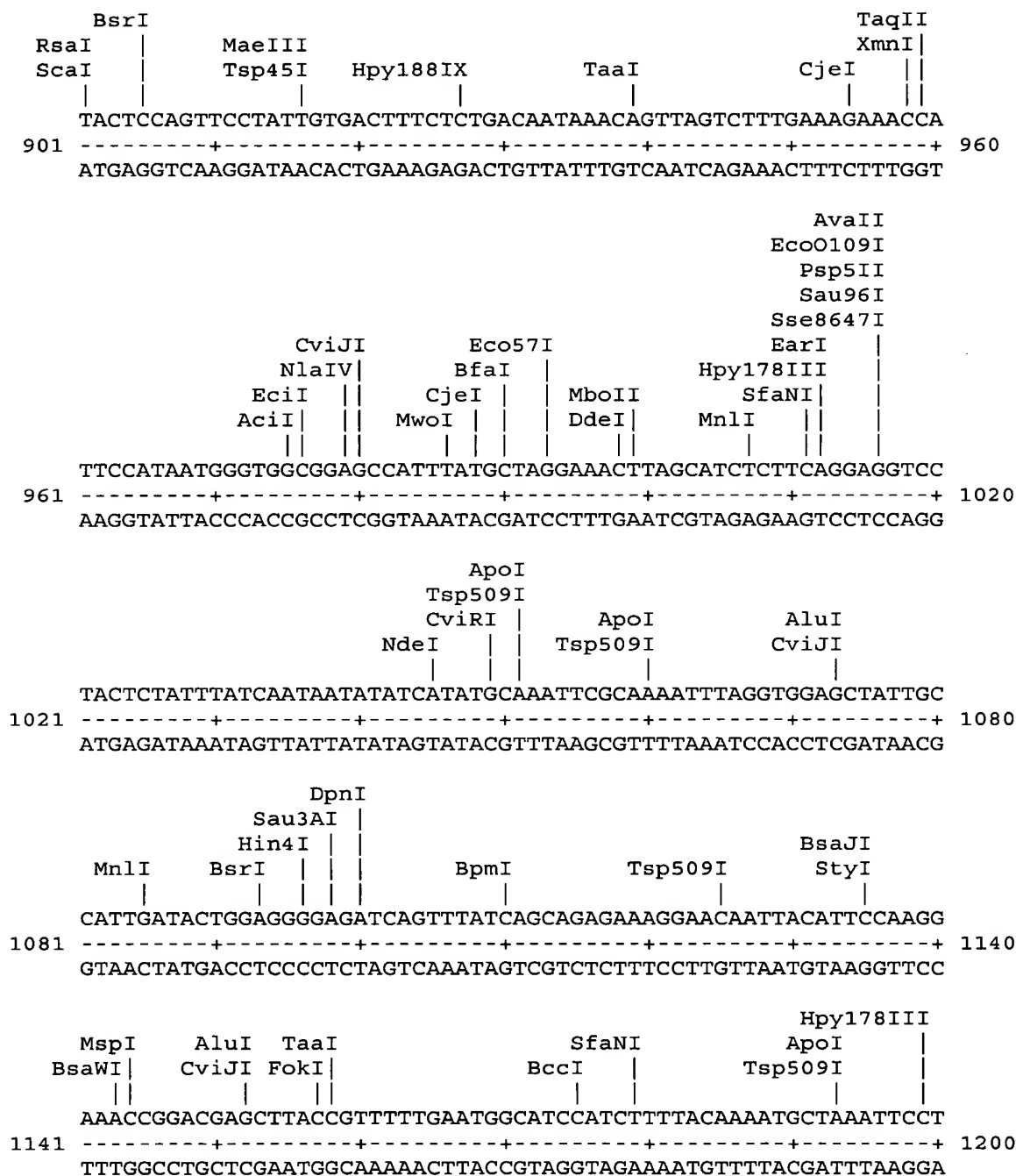
Restriction enzyme analysis of CPN100877 (RY 61 - SEQ ID NO. 6)

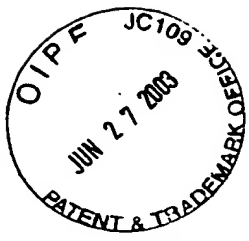




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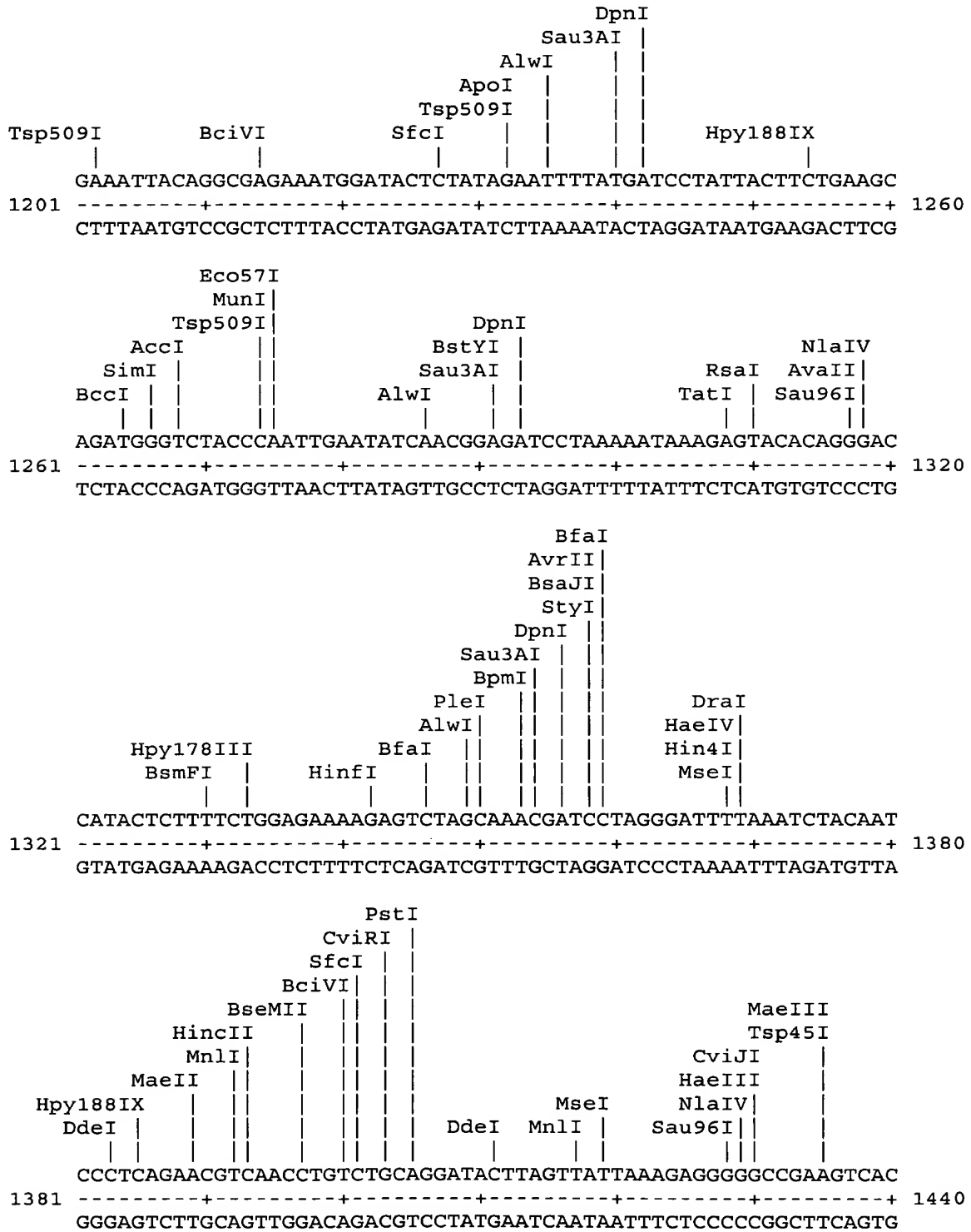
Figure 6D

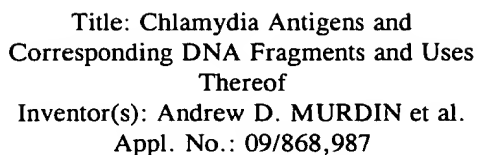




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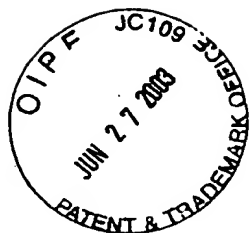
Figure 6E





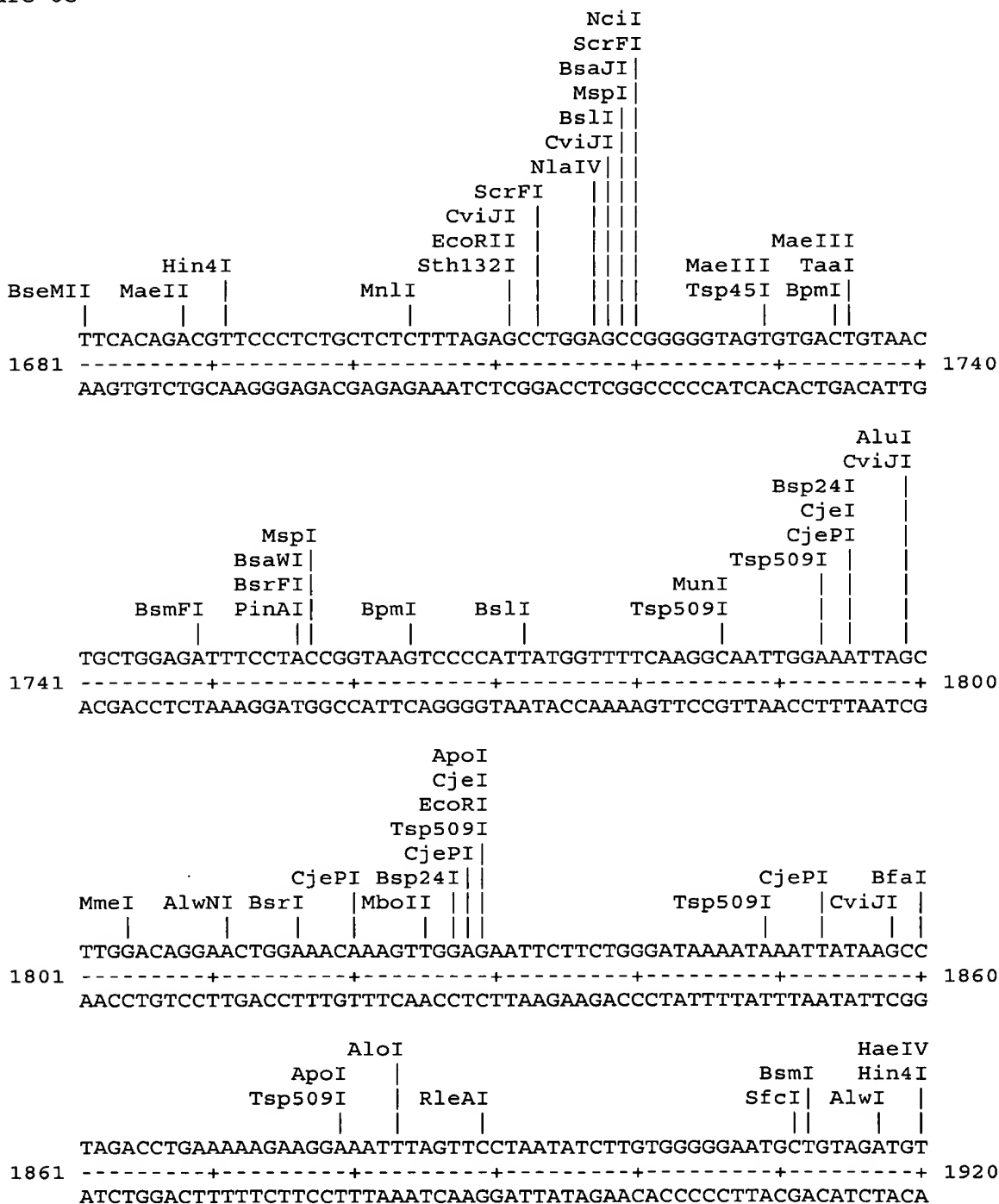
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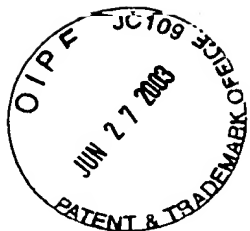
DpnI
 Sau3AI
 BsmAI
 ScrFI
 ApoI
 Tsp509I
 TaaI BpmI
 EcoRII
 BsaXI
 AlwI
 DrdII
 NlaIV
 1441
 AGTTTCAAATTCACGCAGTCTCCAGGATCGCATTTAGTTT TAGATTAGGAACCAAAC T
 TCAAAGTTTTAAGTGCGT CAGAGGTCCTAGCGTAAATCAAATCTAAATCCTTGGTTTGA 1500
 AluI
 CviJI
 MseI
 Hpy178III
 CviJI
 HaeI
 BbsI
 DdeI
 BsrDI
 MboII
 HaeIII
 NruI
 CviJI
 MnlI
 FokI
 1501
 GATAGCCTCTAAGGAAGACATTGCCATCACAGGCCTCGCGATAGATATAGATAGCTTAAG
 CTATCGGAGATTCTTTCTGTAAACGGTAGTGTCCGGAGCGCTATCTATATCTATCGAATTC 1560
 AluI
 AlwNI
 CviJI
 MspAII
 PvuII
 MnlI
 Fnu4HI
 TseI
 BbvI
 MseI
 AciI
 MwoI
 Tth111III
 EcoRV
 MaeIII
 Tsp45I
 PleI
 1561
 CTCATCCTCAACAGCAGCTGTTATTAAAGCAAACACCGCAAATAAACAGATATCCGTGAC
 GAGTAGGAGTTGTCTGTCGACAATAATTCGTTTGTGGCGTTTATTTGTCTATAGGCACTG 1620
 ApoI
 Tsp509I
 MboII
 Hpy188IX
 DdeI
 DpnI
 BglII
 BstYI
 Sau3AI
 SfcI
 HinfI
 BsrI
 BsrDI
 1621
 GGACTCTATAGAACTTATCTCGCCTACTGGCAATGCCTATGAAGATCTCAGAATGAGAAA
 CCTGAGATATCTTGAATAGAGCGGATGACCGTTACGGATACTTCTAGAGTCTTACTCTTT 1680



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Inventor(s): Andrew D. MURDIN et al.
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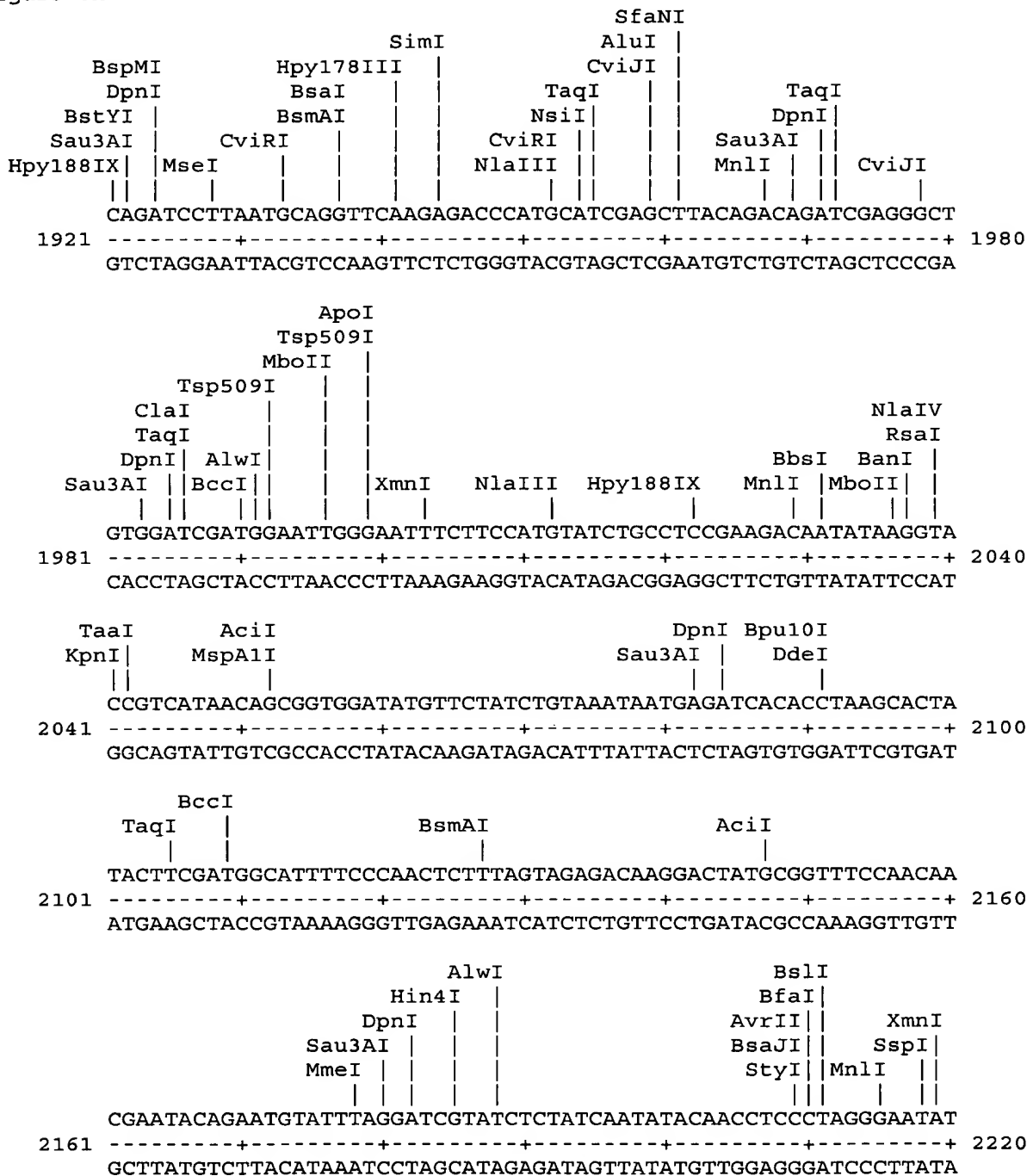
Figure 6G

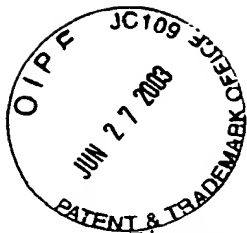




Title: Chlamydia Antigens and
Corresponding DNA Fragments and Uses
Thereof
Inventor(s): Andrew D. MURDIN et al.
Appl. No.: 09/868,987

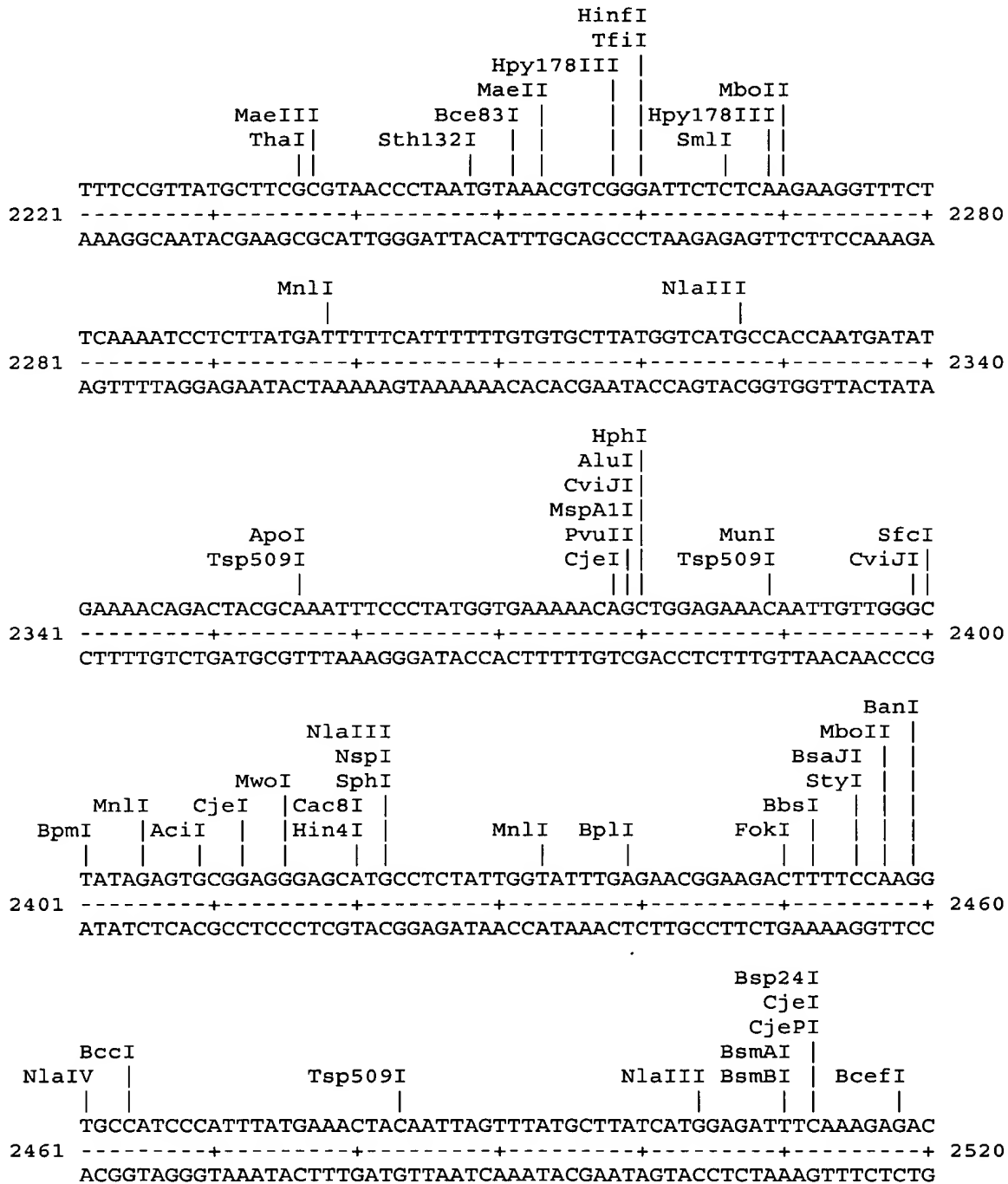
Figure 6H

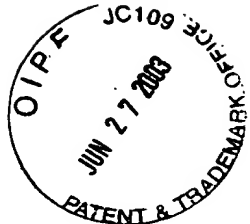




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Corresponding DNA Fragments and Uses
Thereof
Inventor(s): Andrew D. MURDIN et al.
Appl. No.: 09/868,987

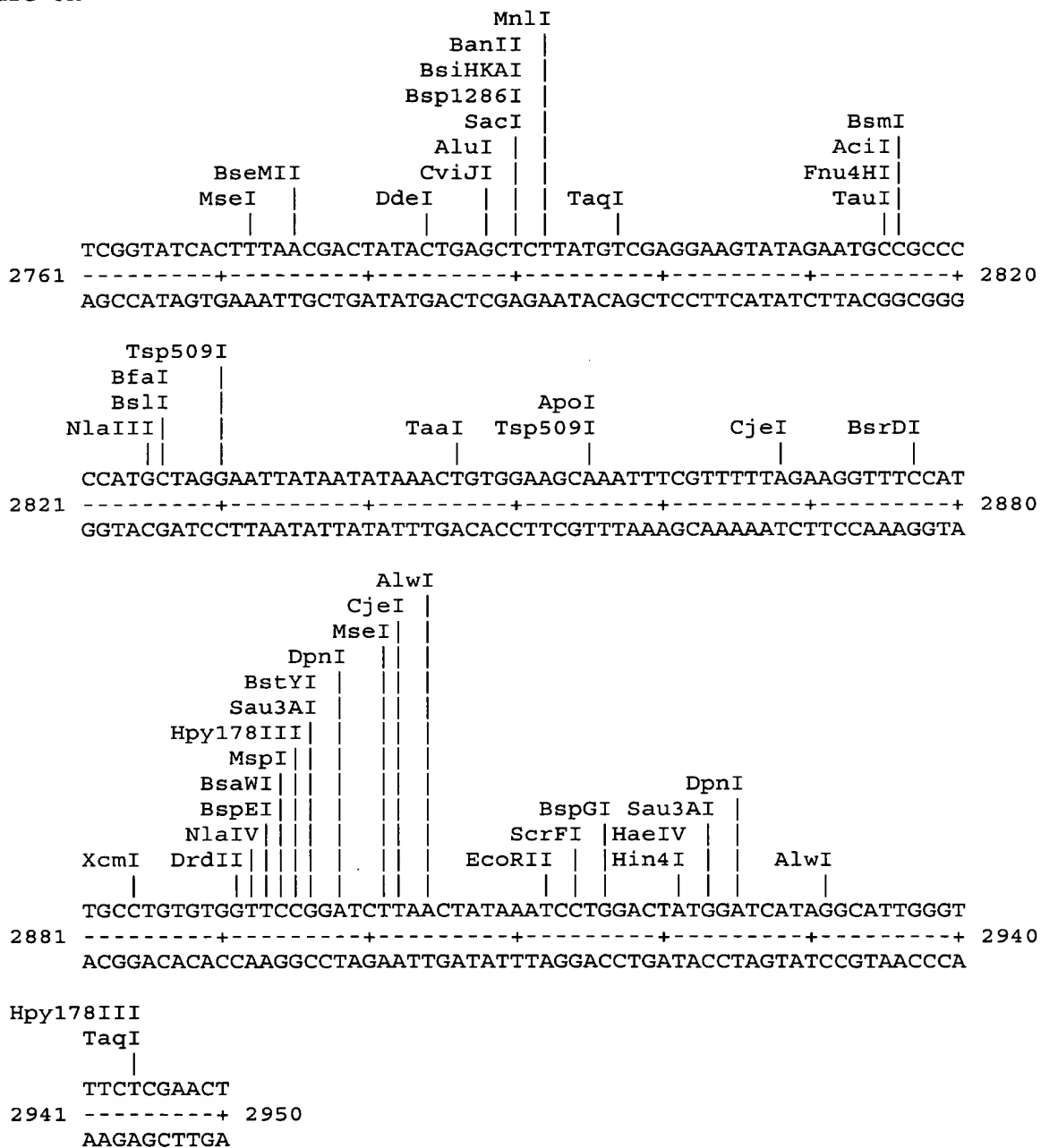
Figure 6I

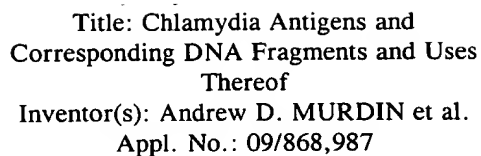




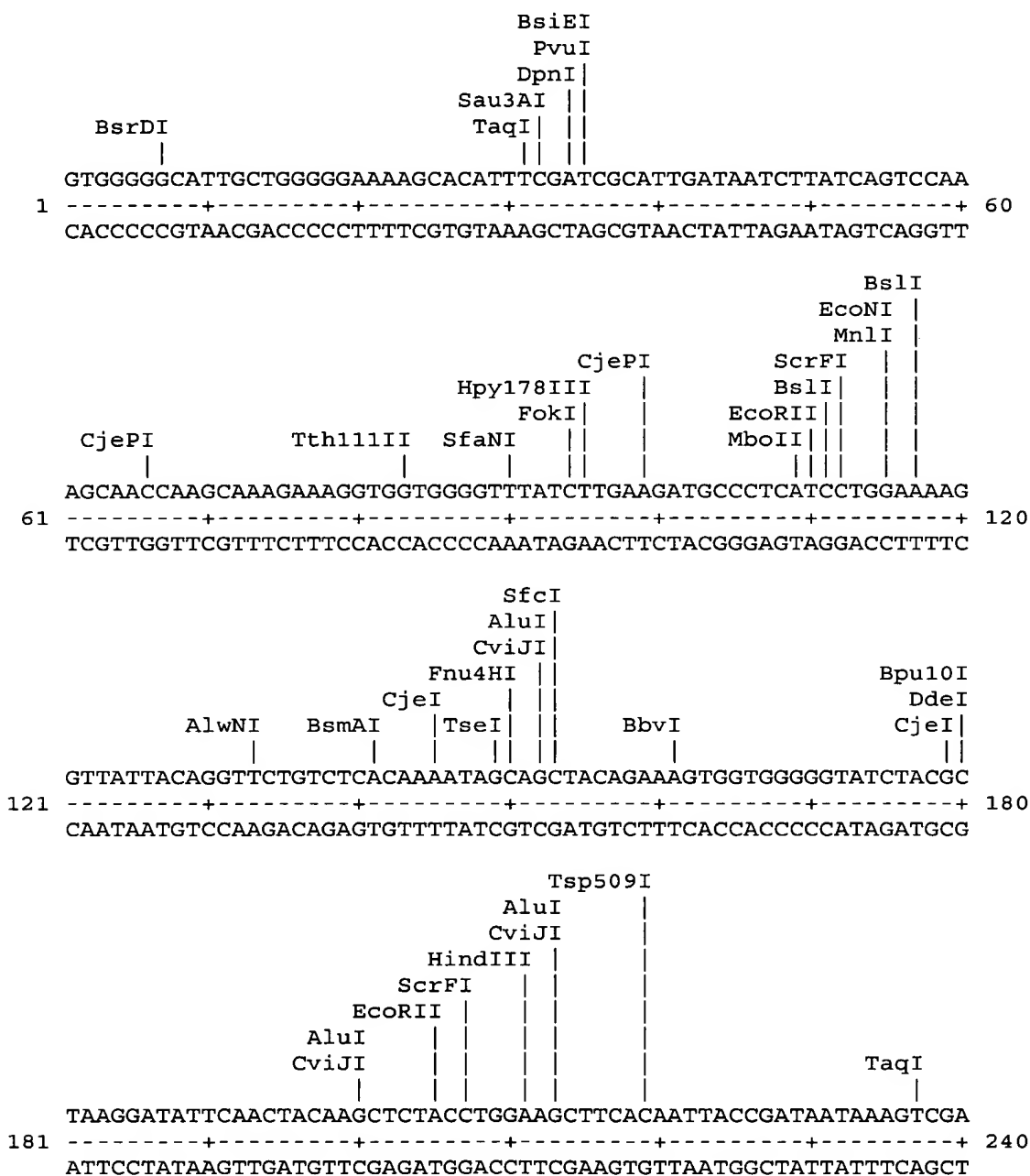
Title: Chlamydia Antigens and
Corresponding DNA Fragments and Uses
Thereof
Inventor(s): Andrew D. MURDIN et al.
Appl. No.: 09/868,987

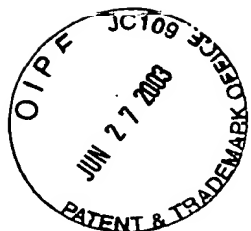
Figure 6K





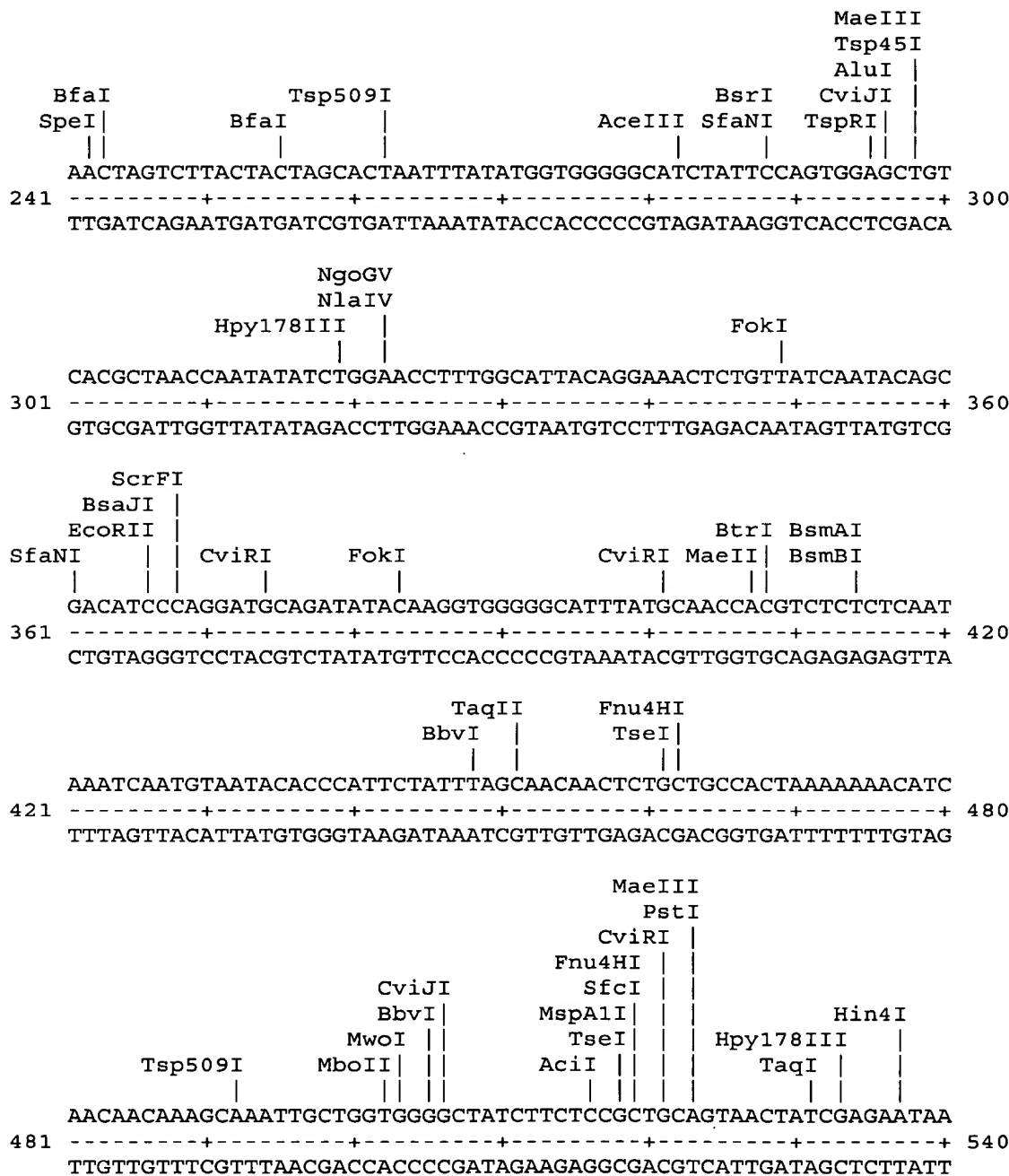
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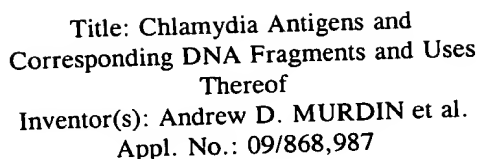


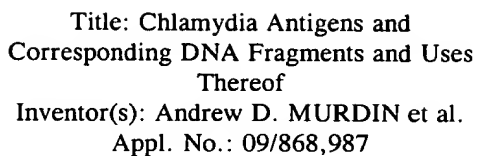


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Appl. No.: 09/868,987

Figure 7B



[illegible]



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```

                                     AclI
                                   MaeII
                               HincII
                              HpaI
                             MseI
                        AluI
                       CviJI
                   HindIII |
                 MwoI |||
                TACAGCAATAGAAGCTTCAGCAGGGAAAGCTATATCTTTTCTATGATGCAGTTAACGTTCC
1141 -----+-----+-----+-----+-----+-----+-----+-----+-----+ 1200
                ATGTCGTTATCTTCGAAGTCGTCCCTTTTCGATATAGAAAGATACTACGTCAATTGCAAGG


                                MseI
                            Tsp509I
                           AluI
                          CviJI
                     Hpy178III
                  MunI
            Bce83I   Tsp509I    SmlI      |       |       |       |
          ACCAAAGAAACAATTGCTCAAGAGCTAAATTAAATGAAAAAGCGACAAGTACANGGACGT
1201 -----+-----+-----+-----+-----+-----+-----+-----+ 1260
              TGGTTTCTTTGTTAACGAGTTCTCGATTTAATTTACTTTTTTCGCTGTTCATGTNCCTGCA


                                Bsp24I
                               CjePI
                              CjeI
                         BsmFI     |||
                    TTCTANTTTCTGGGGGACTTCACGGAAATAAATCCCTATTCCACAGAAAGTCACCTTCGCC
1261 -----+-----+-----+-----+-----+-----+-----+-----+ 1320
                    AAGATNAAAGACCCCCTGAAGTGCCCTTTATTTAGGGATAAGGTGTCTTTCAGTGAAGCGG

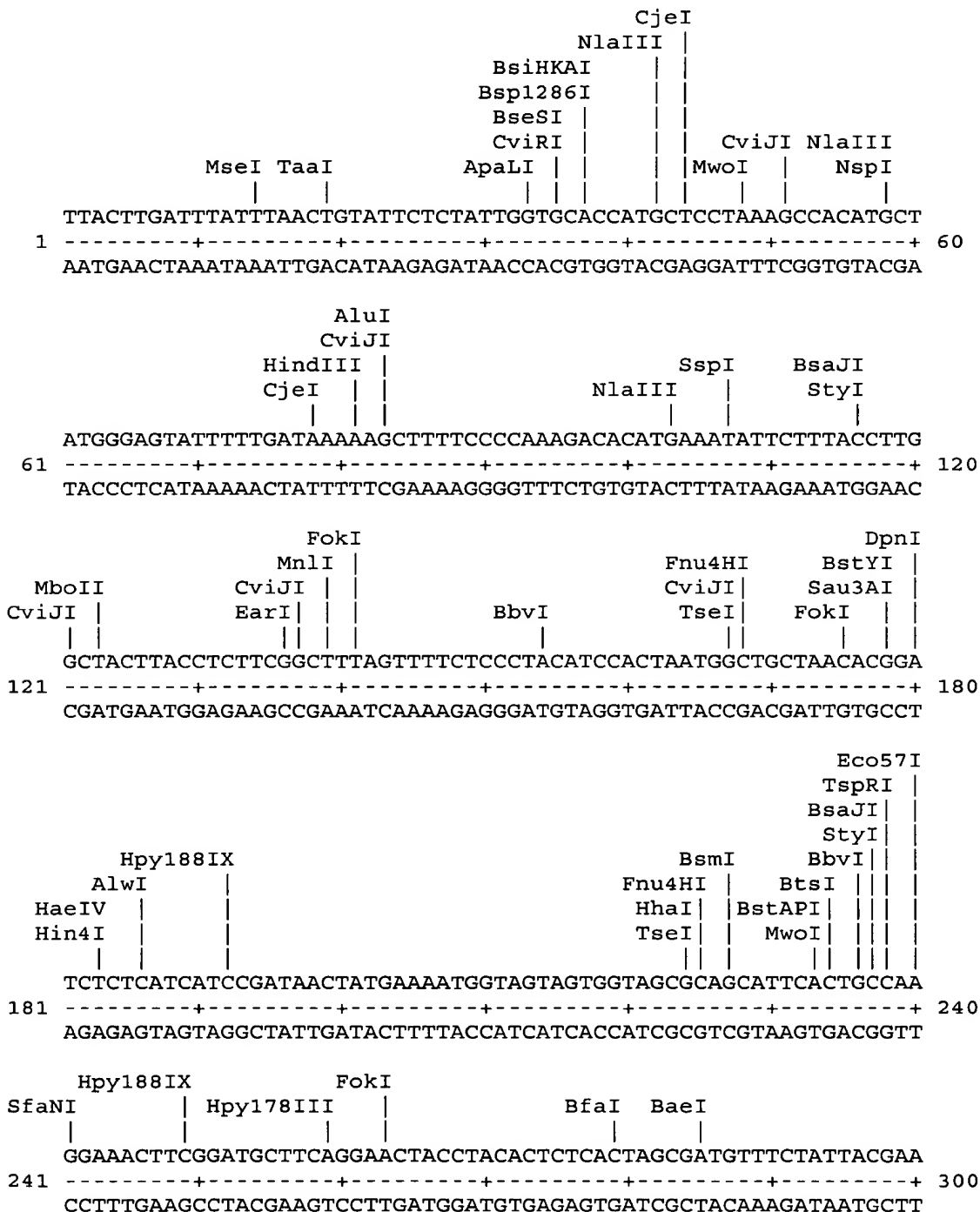

               CjeI
             CjePI
         Bsp24I |
           ||
        CTNGGGAT
1321 ----- 1328
        GANCCCTA
```

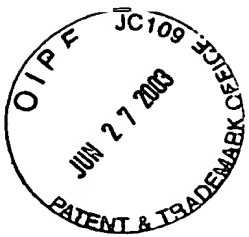


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Corresponding DNA Fragments and Uses
Thereof
Inventor(s): Andrew D. MURDIN et al.
Appl. No.: 09/868,987

Figure 8A

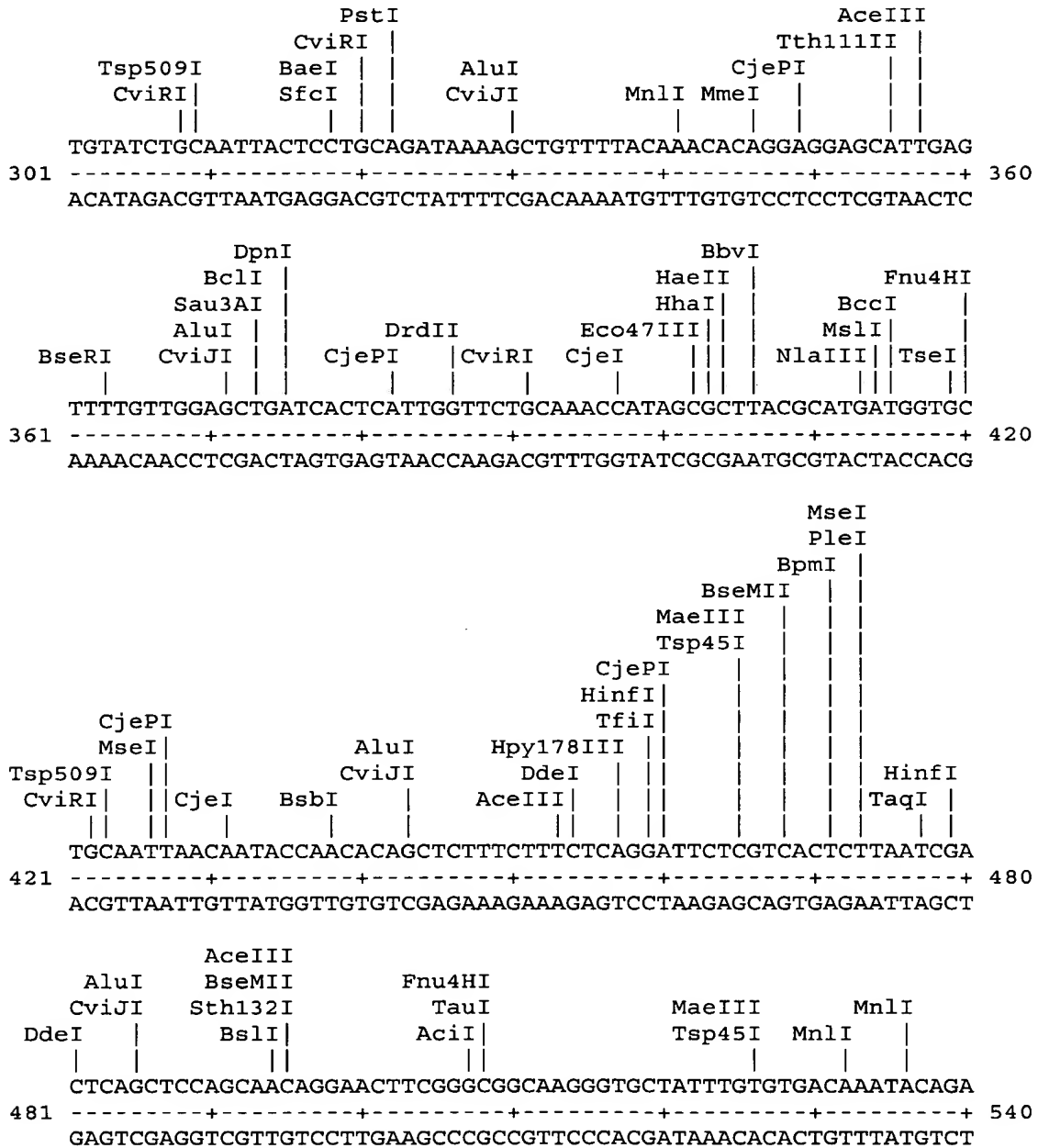
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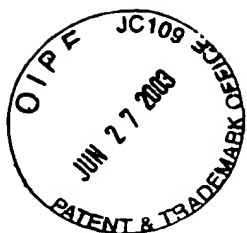




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Thereof
Inventor(s): Andrew D. MURDIN et al.
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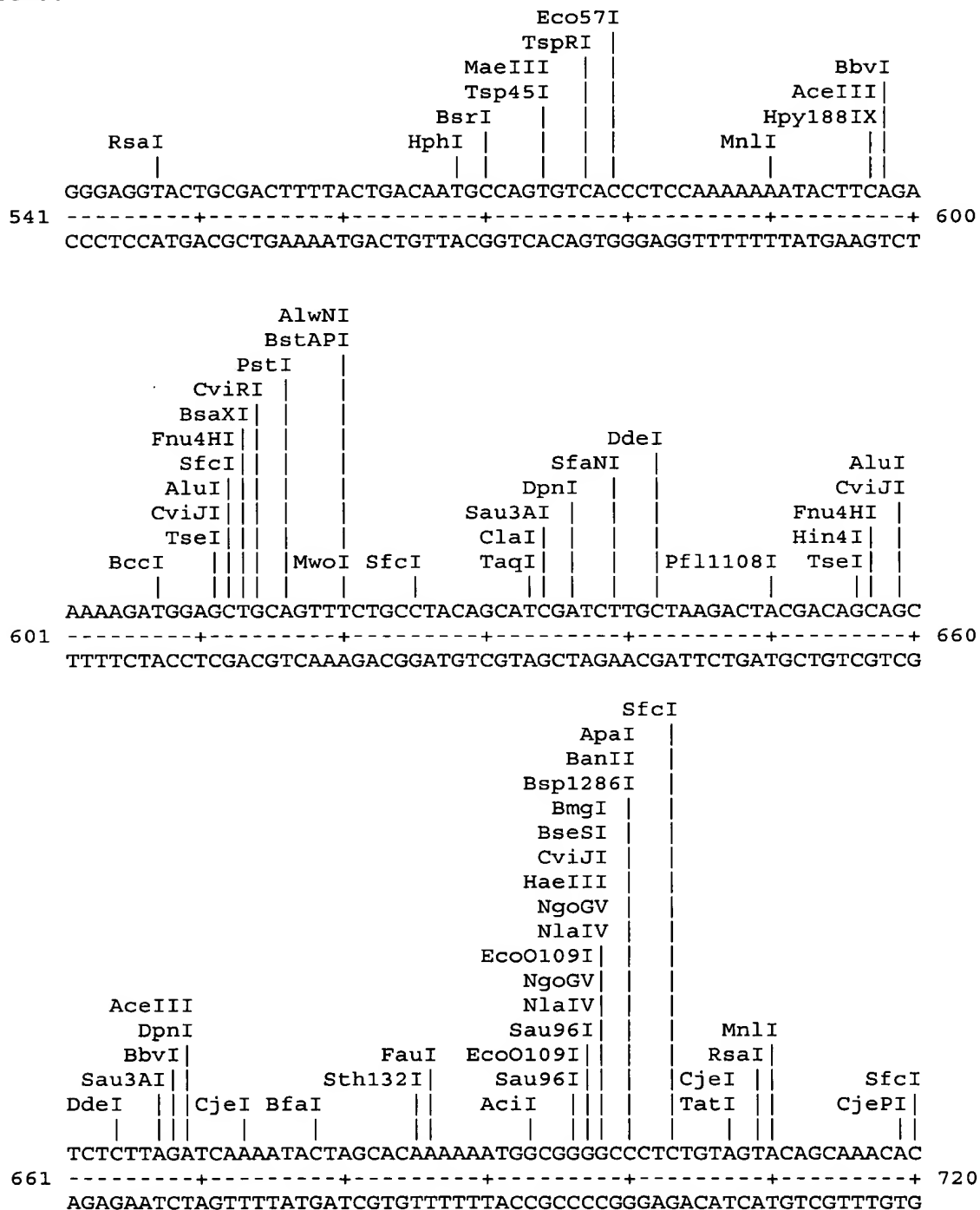
Figure 8B

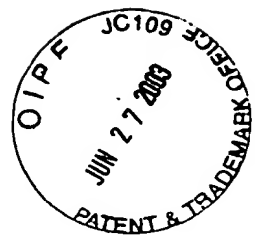




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Corresponding DNA Fragments and Uses
Thereof
Inventor(s): Andrew D. MURDIN et al.
Appl. No.: 09/868,987

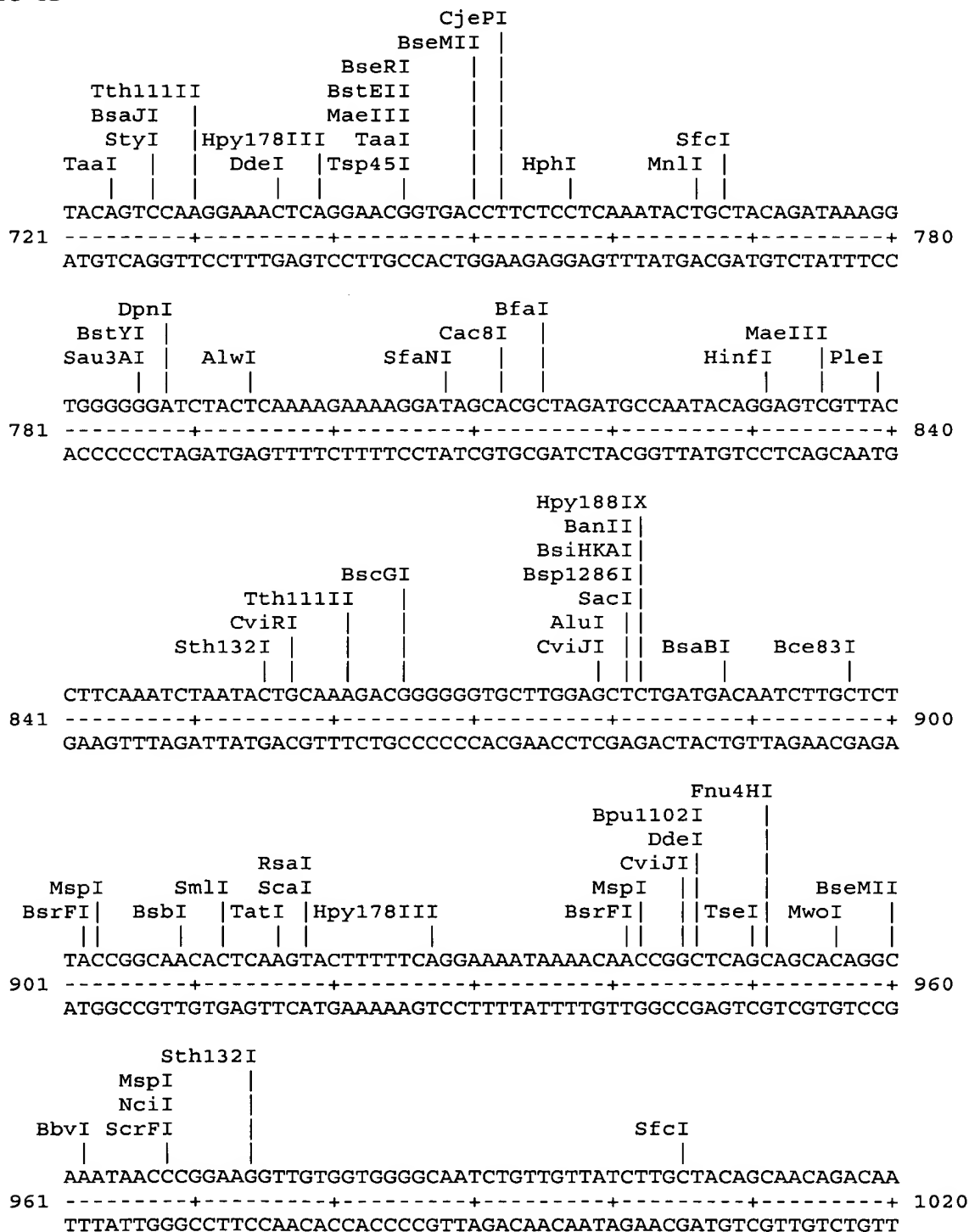
Figure 8C





Title: Chlamydia Antigens and
Corresponding DNA Fragments and Uses
Thereof
Inventor(s): Andrew D. MURDIN et al.
Appl. No.: 09/868,987

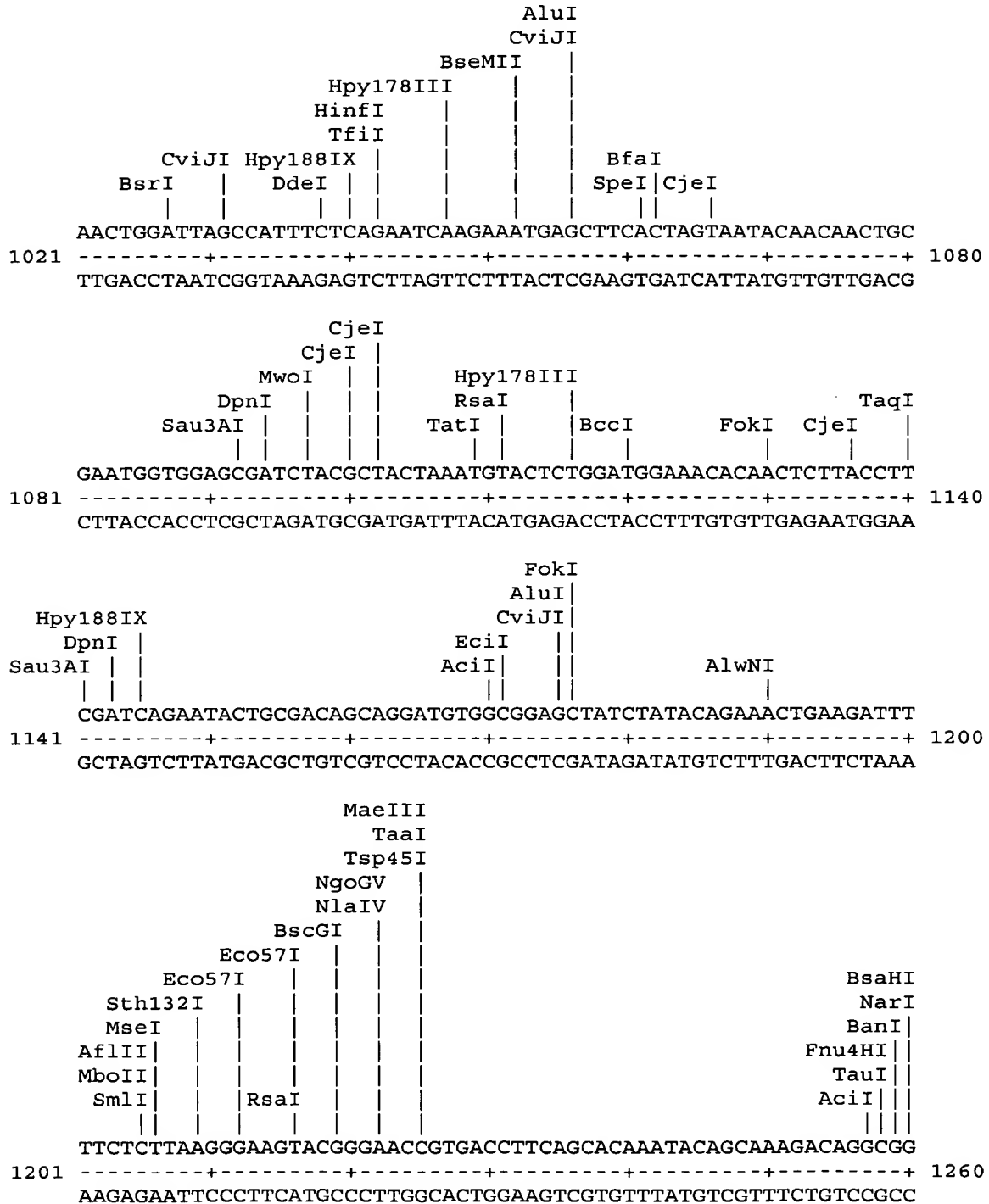
Figure 8D





Title: Chlamydia Antigens and
Corresponding DNA Fragments and Uses
Thereof
Inventor(s): Andrew D. MURDIN et al.
Appl. No.: 09/868,987

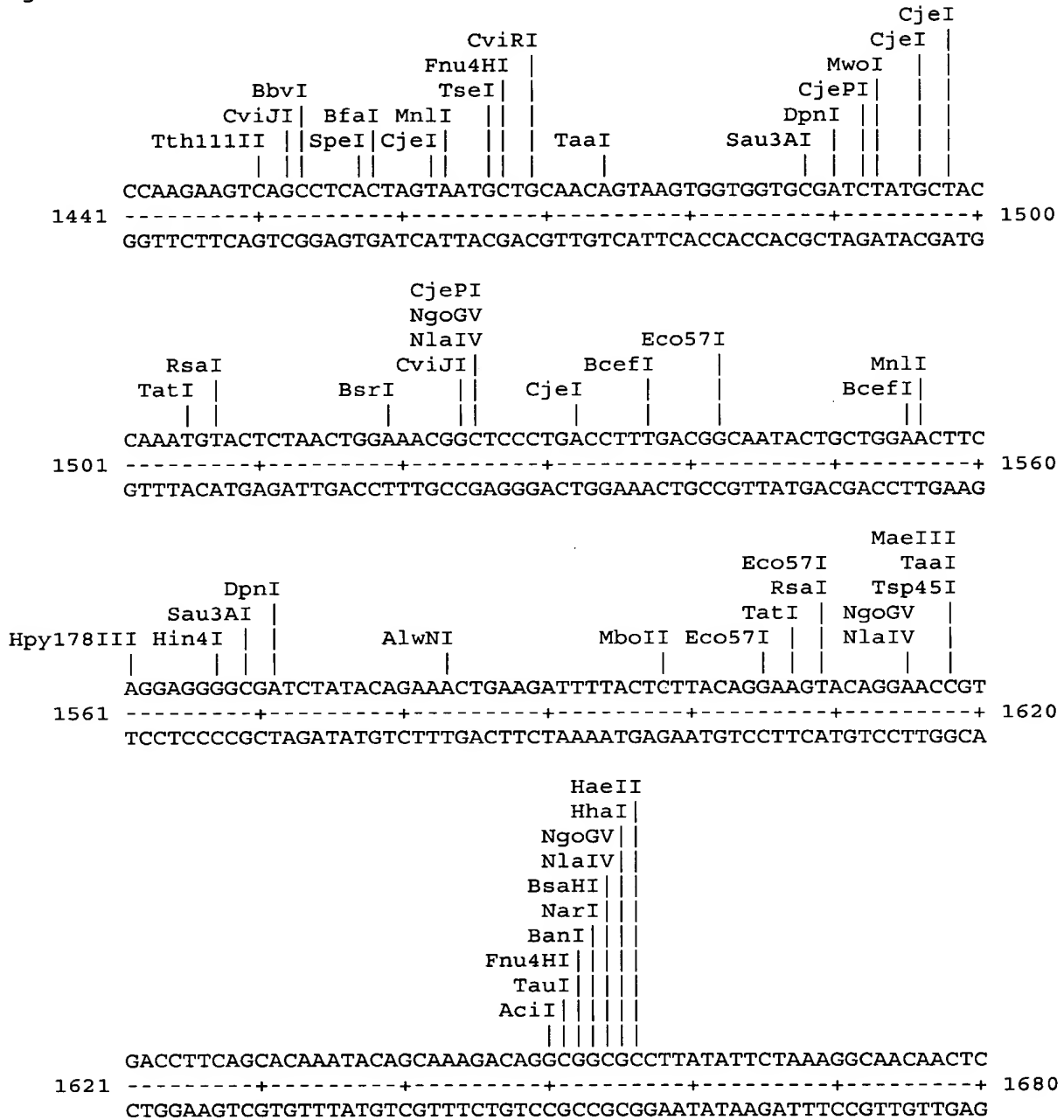
Figure 8E

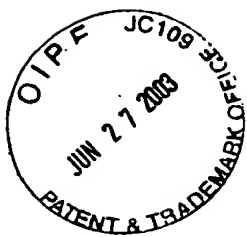




Title: Chlamydia Antigens and
Corresponding DNA Fragments and Uses
Thereof
Inventor(s): Andrew D. MURDIN et al.
Appl. No.: 09/868,987

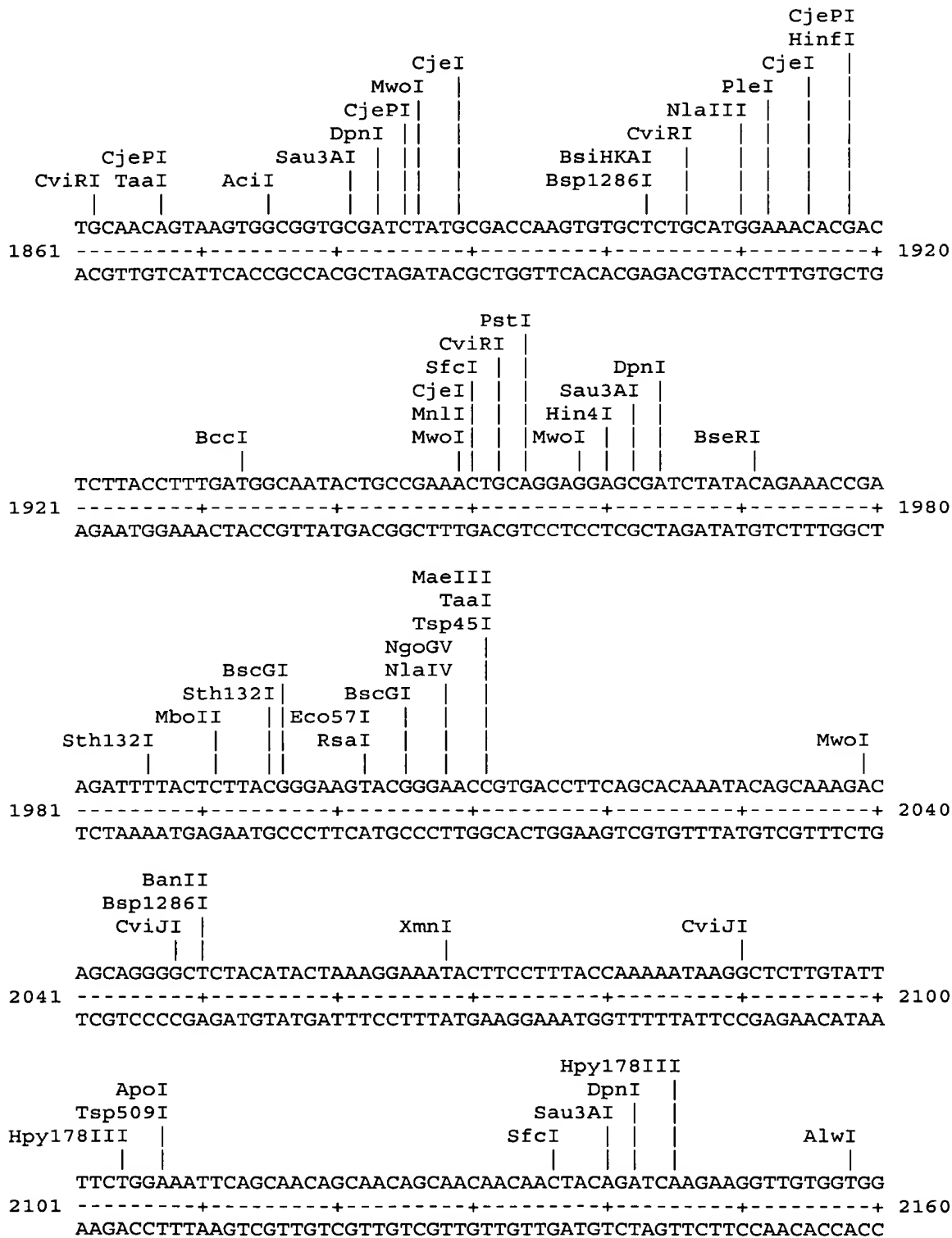
Figure 8G

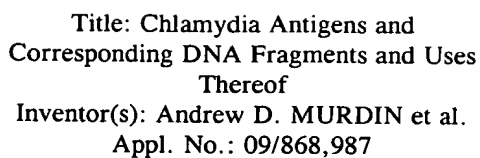


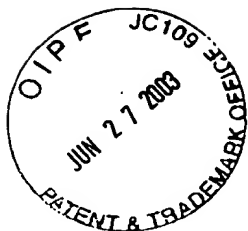


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Corresponding DNA Fragments and Uses
Thereof
Inventor(s): Andrew D. MURDIN et al.
Appl. No.: 09/868,987

Figure 8I







Title: Chlamydia Antigens and
Corresponding DNA Fragments and Uses
Thereof
Inventor(s): Andrew D. MURDIN et al.
Appl. No.: 09/868,987

Figure 8L

```

      AvaII
      Sau96I
      BslI
      PflMI
      BsmI
      Bce83I
      MboII
      Hpy178III
      SmlI
      CviJI
      ApoI
      Tsp509I

      AAATGGTCCTATATAGAAAGAAAAACGAATGCTCTTTGTAAGGCTCAAGAGTAAAAAATTC
2701 -----+-----+-----+-----+-----+ 2760
      TTTACCAGGATATATCTTCTTTTGTCTTACGAGAAACATTCCGAGTTCTCATTTTTTTAAG

      Hpy188IX
      BcefI
      BbvI
      Fnu4HI
      TseI
      ApoI
      EcoRI
      Tsp509I
      Eco57I

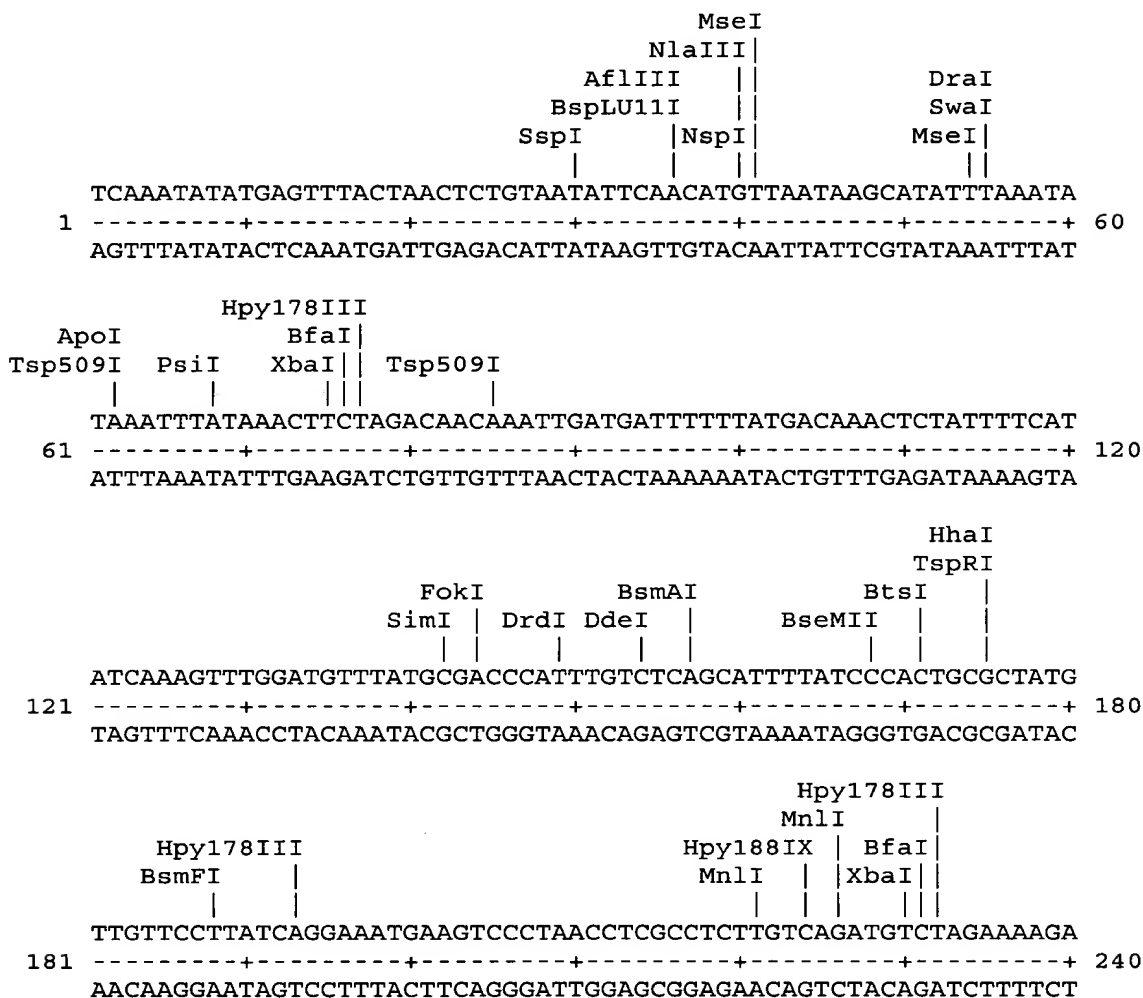
      TAAAGGTATTCTCTCAATAGGTTCTGAAGTGCTGCCGTAGAATTCATAAATATCTC
2761 -----+-----+-----+-----+-----+ 2816
      ATTTCCATAAGAGAGTTATCCAAGACTTCACGACGGCATCTTAAGTATTTATAGAG
```



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Corresponding DNA Fragments and Uses
Thereof
Inventor(s): Andrew D. MURDIN et al.
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Figure 9A

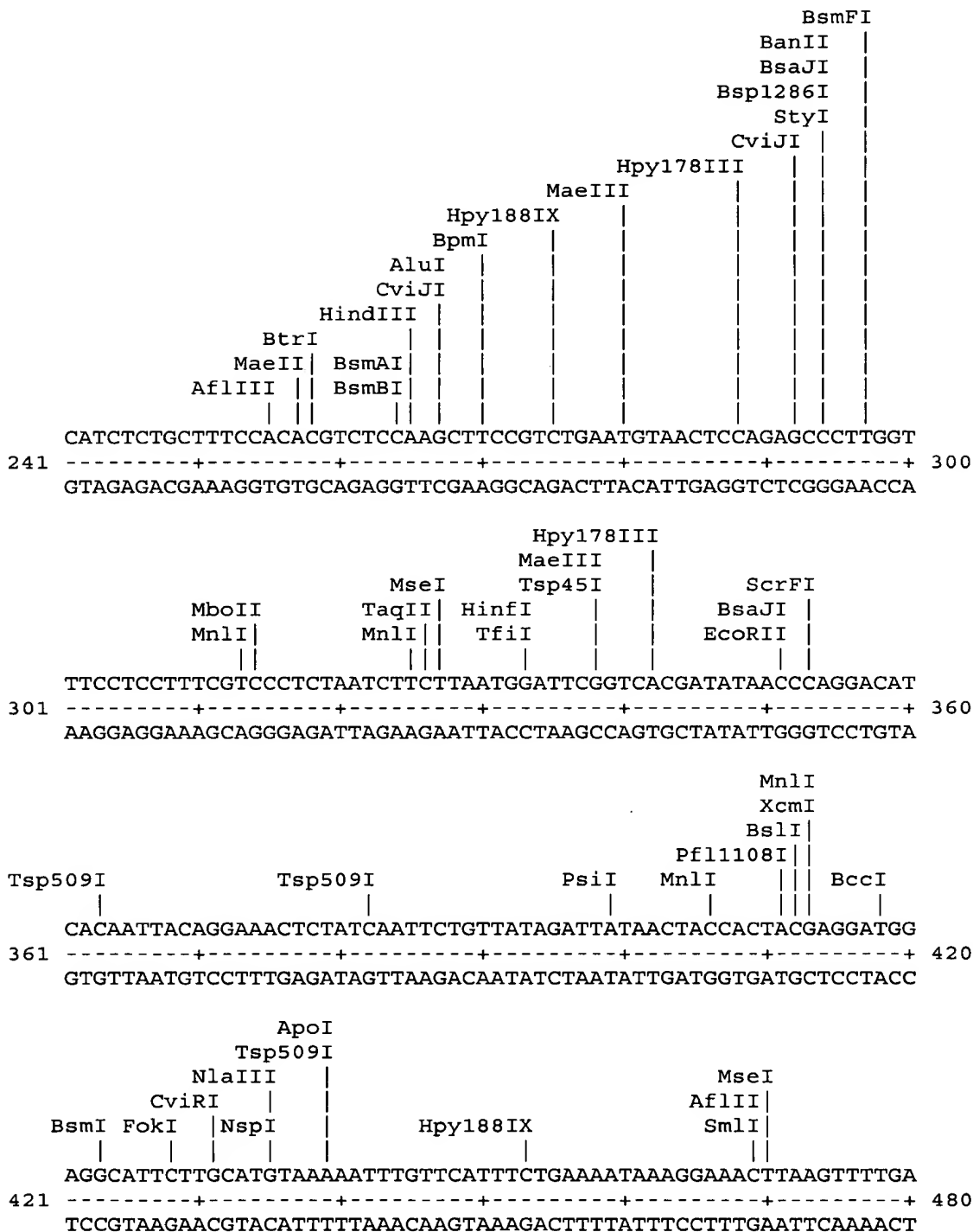
Restriction enzyme analysis of CPN100624 (RY 64 - SEQ ID NO. 9)





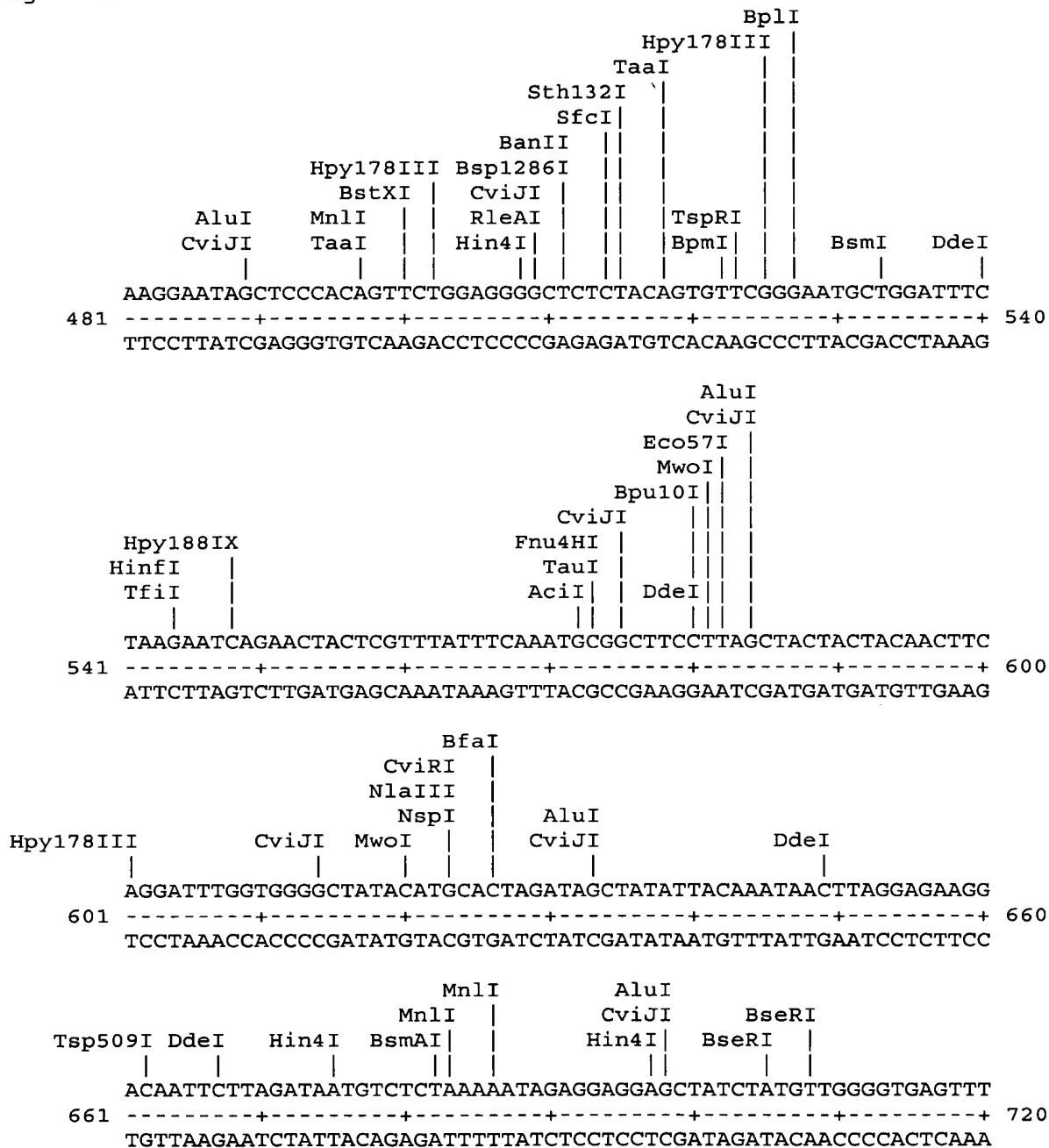
Title: Chlamydia Antigens and
Corresponding DNA Fragments and Uses
Thereof
Inventor(s): Andrew D. MURDIN et al.
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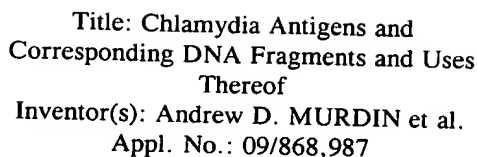
Figure 9B



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Corresponding DNA Fragments and Uses
Thereof
Inventor(s): Andrew D. MURDIN et al.
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Figure 9C





AvaII
EcoO109I
Psp5II
Sau96I
Sse8647I
HphI
DdeI
Hpy178III
Tth111II
Hinfi
Tfii

ATCAATCACAGACAACCTTAGGTCCTATCGTTATCAAGAAAAATCAAACATTAGAAGATTCTAGTTAGTGTCTGTTGAATCCAGGATAGCAATAGTTCTTTTTAGTTTGTAATCCTTCTAAG

CviJI
PstI
BseRI
CviRI
SfaNI
MboII
MnlI
AluI
CviJI
MnlI
Hin4I
Bcefi
BstAPI
SfcI
MwoI
Tsp509I
FokI

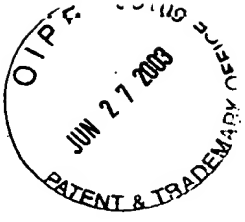
CAGCTTTGGAGGAGGCATCTTCTGCAGAGCCGTAAATATAGAAAGGAATTATCAAAACATGTCGAAACCTCCTCCGTAGAACGCTCTCGGCATTTATATCTTTCCTTAATAGTTTTGTA

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MboII
Hinfi
BfaI
AvrII
BsaJI
CjeI
StyI
CjePI
Bsp24I
Eco57I
Hpy178III
Bsp24I
CjeI
CjePI

CCAAATCAATGATAATGCTTCAGGACAAGGGGTGGTATATTTTCTGCCCTAGGAGTCATGGTTTAGTTACTATTACGAAGTCCTGTTCCCCACCATATAAAAAGACGGGGATCCTCAGTA

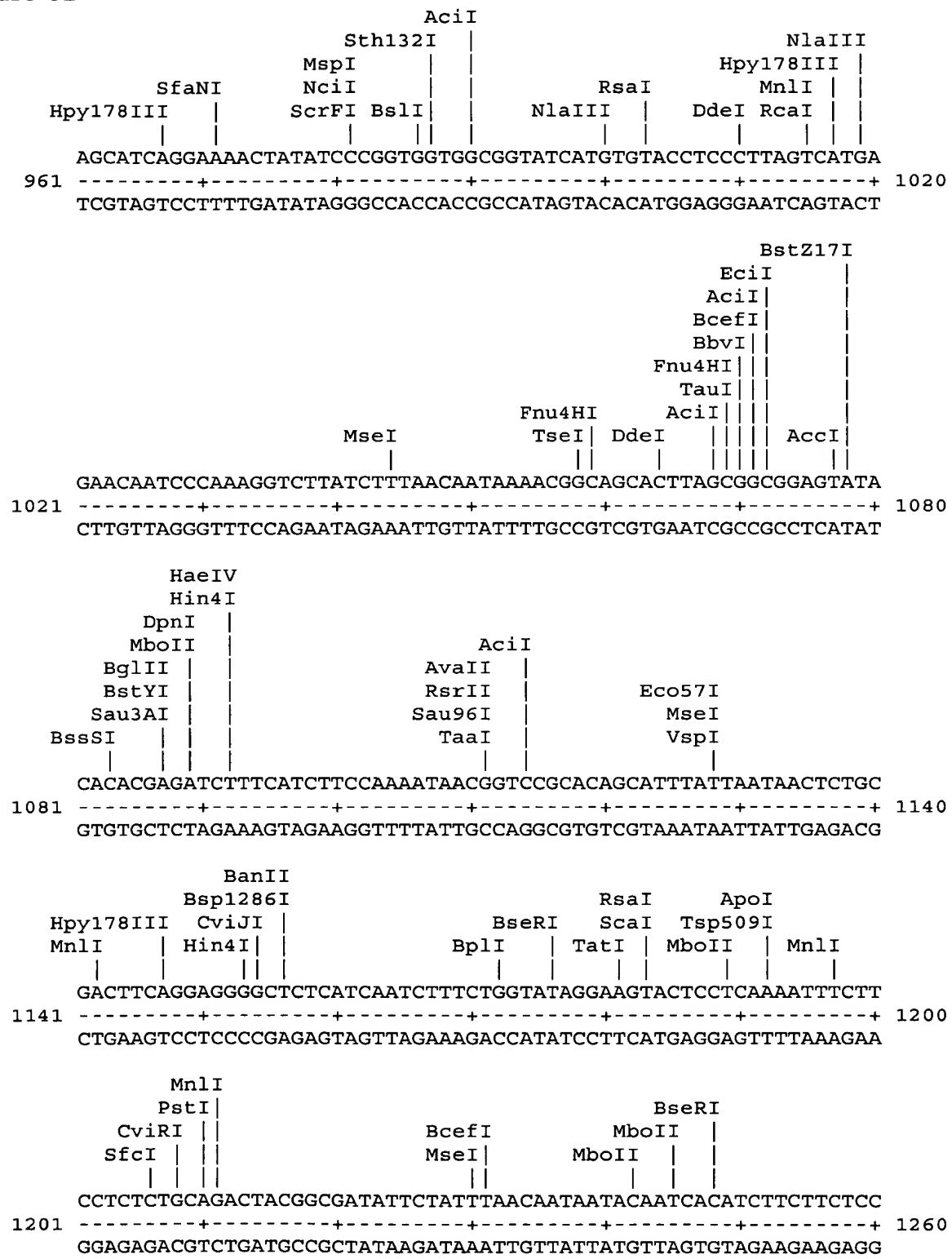
HaeIV
Hin4I
FokI
DpnI
PleI
EarI
Tsp509I
Sau3AI
Acii
MseI
SfaNI
Tsp509I
Mnli

TATCTCTTCAAAATAAAGAAATTATAGAGATCAGCAATCACTCCGCATCCTCAATTAACACATAGAGAAGTTTATTTCTTTAATATCTCTAGTCGTTAGTGAGGCGTAGGAGTTAATTGTG



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Figure 9E

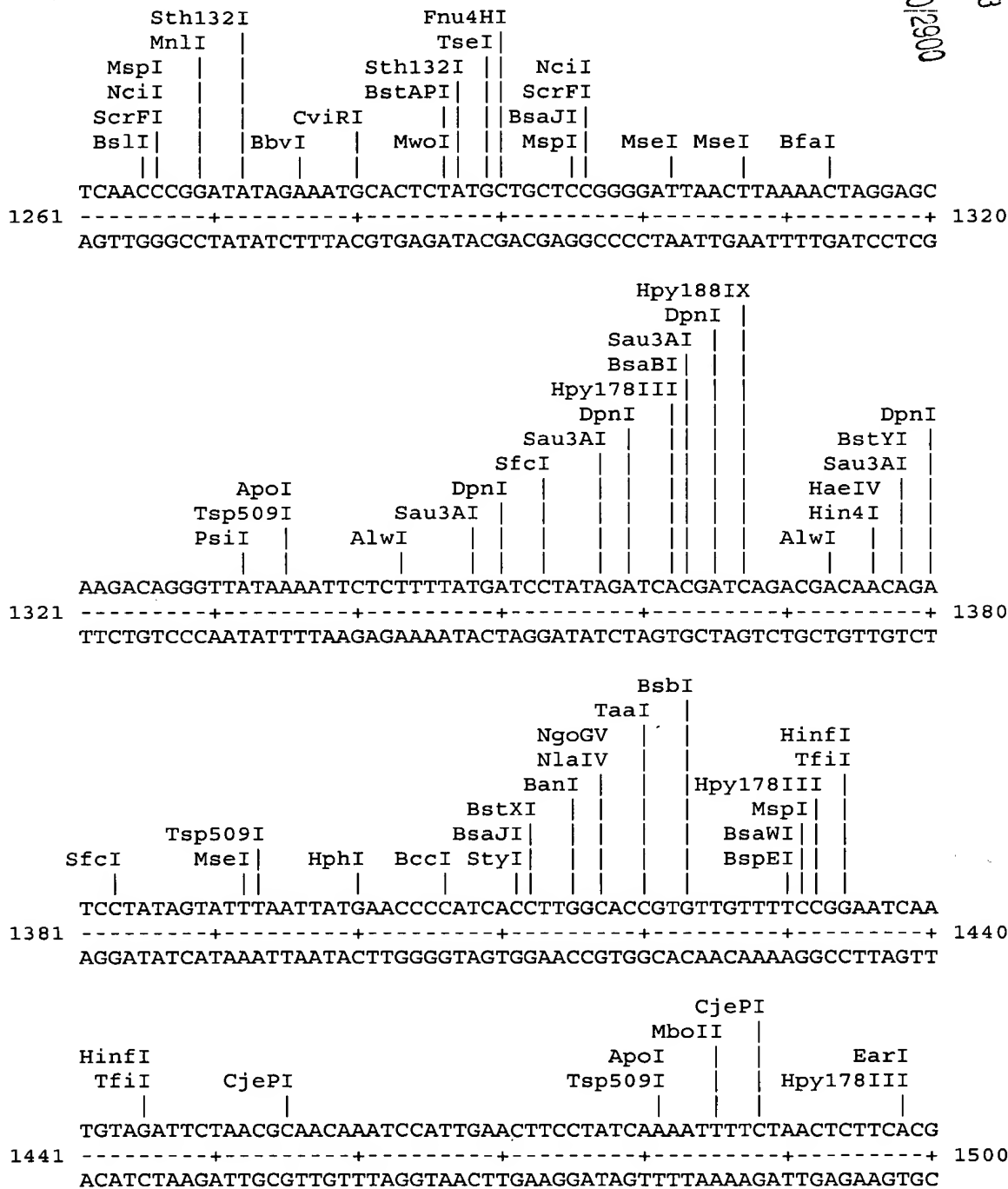


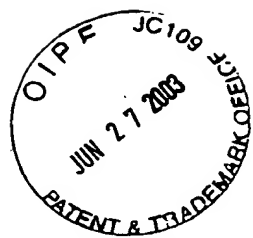


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Thereof
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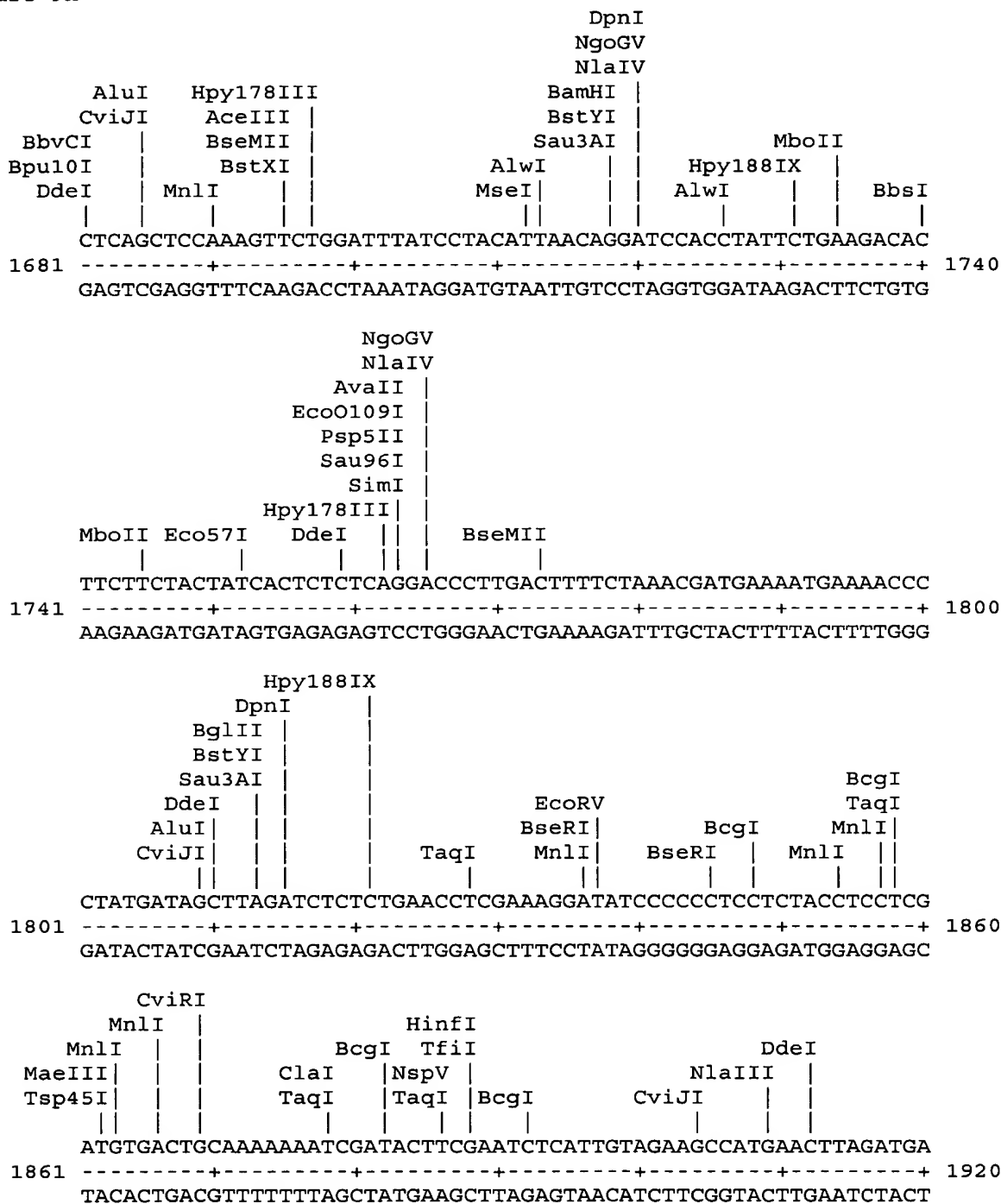
Figure 9F

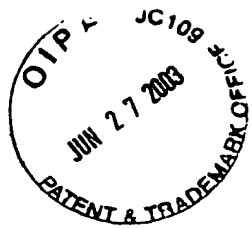




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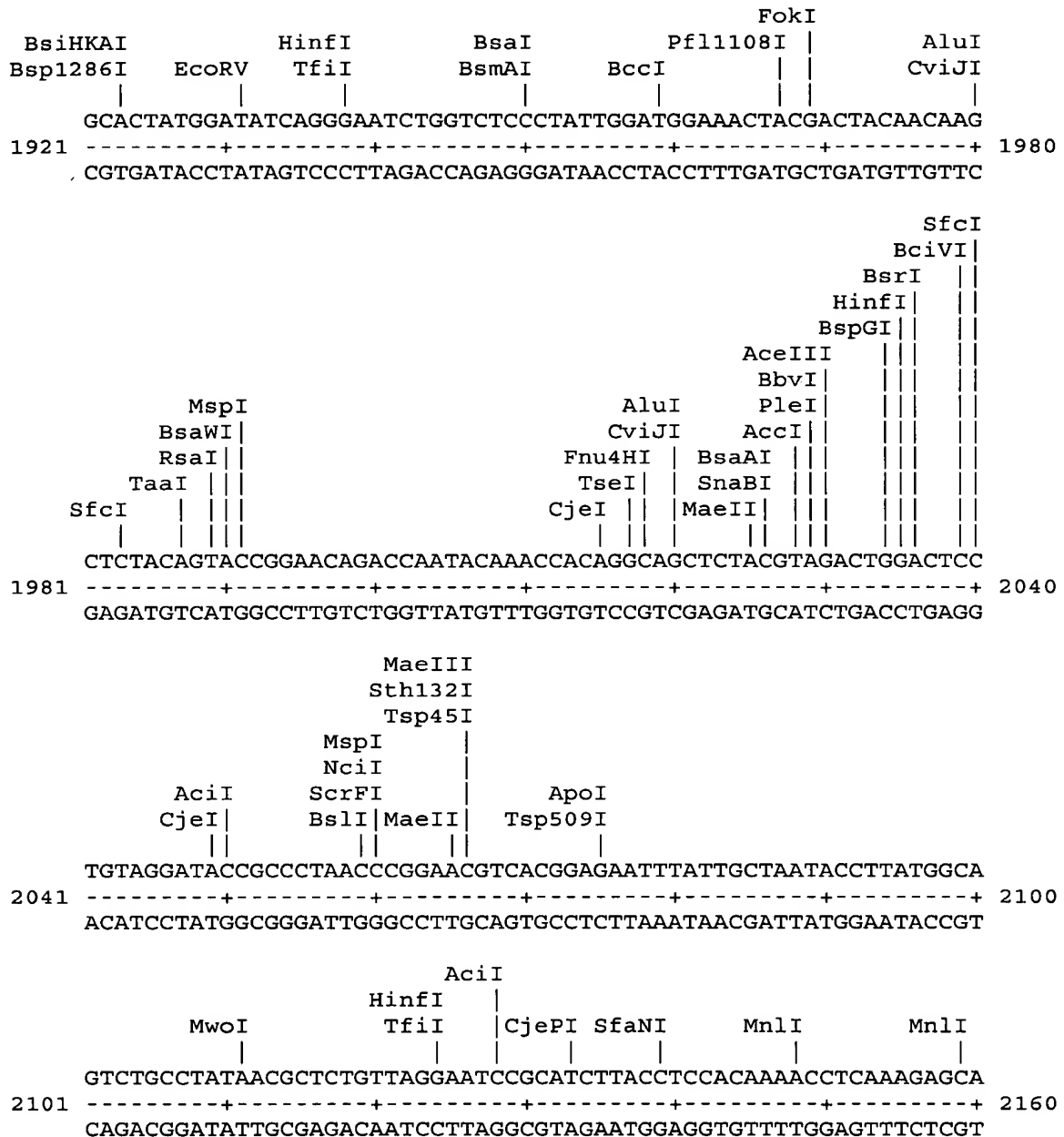
Figure 9H

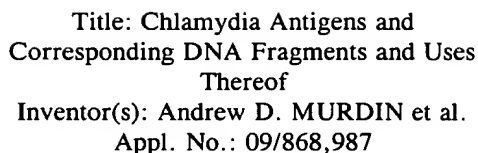




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Thereof
Inventor(s): Andrew D. MURDIN et al.
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Figure 9I





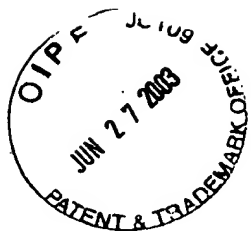
NlaIII CjePI CviJI Sth132I PleI MnlI HinfI MnlI Tsp509I MseI Hpy178III NruI MnlI ThaI MwoI
 2161 TGACCTTGAAGCCTCTCTGCAAGGACTCGGGCTTCTAATTAACCAACATAATCGCGAGGG
 -----+-----+-----+-----+-----+-----+-----+-----+-----+-----+ 2220
 ACTGGAAGCTTCGGAGAGACGTTCTGAGCCCGAAGATTAATTGGTTGTATTAGCGCTCCC

 Sth132I Hpy188IX BsmFI CviJI HgaI BslI BscGI CviJI TseI Fnu4HI BbvCI Bpu10I DdeI BstAPI MwoI MnlI TseI BseMII Fnu4HI CviRI
 2221 ACGCAAAGGCTTCCGAAACCATACTACGGGCTATGCAGCAACAACCTCAGCAAAAAGTGC
 -----+-----+-----+-----+-----+-----+-----+-----+-----+-----+ 2280
 TGCCTTTCCGAAGGCTTTGGTATGATGCCCCGATACGTCGTTGTTGGAGTCGTTTTTGACG

 PstI BbvI HinfI TfiI BfaI MaeII
 2281 AGCAGCATAGTTTCTCTTTAGGATTTCGCACAAATGTTCTCCAAAAGTACGAGAACGTCA
 -----+-----+-----+-----+-----+-----+-----+-----+-----+-----+ 2340
 TCGTGCTGTATCAAAGAGAAATCCTAAGCGTGTTTACAAGAGGTTTTGATCTCTTGCAGT

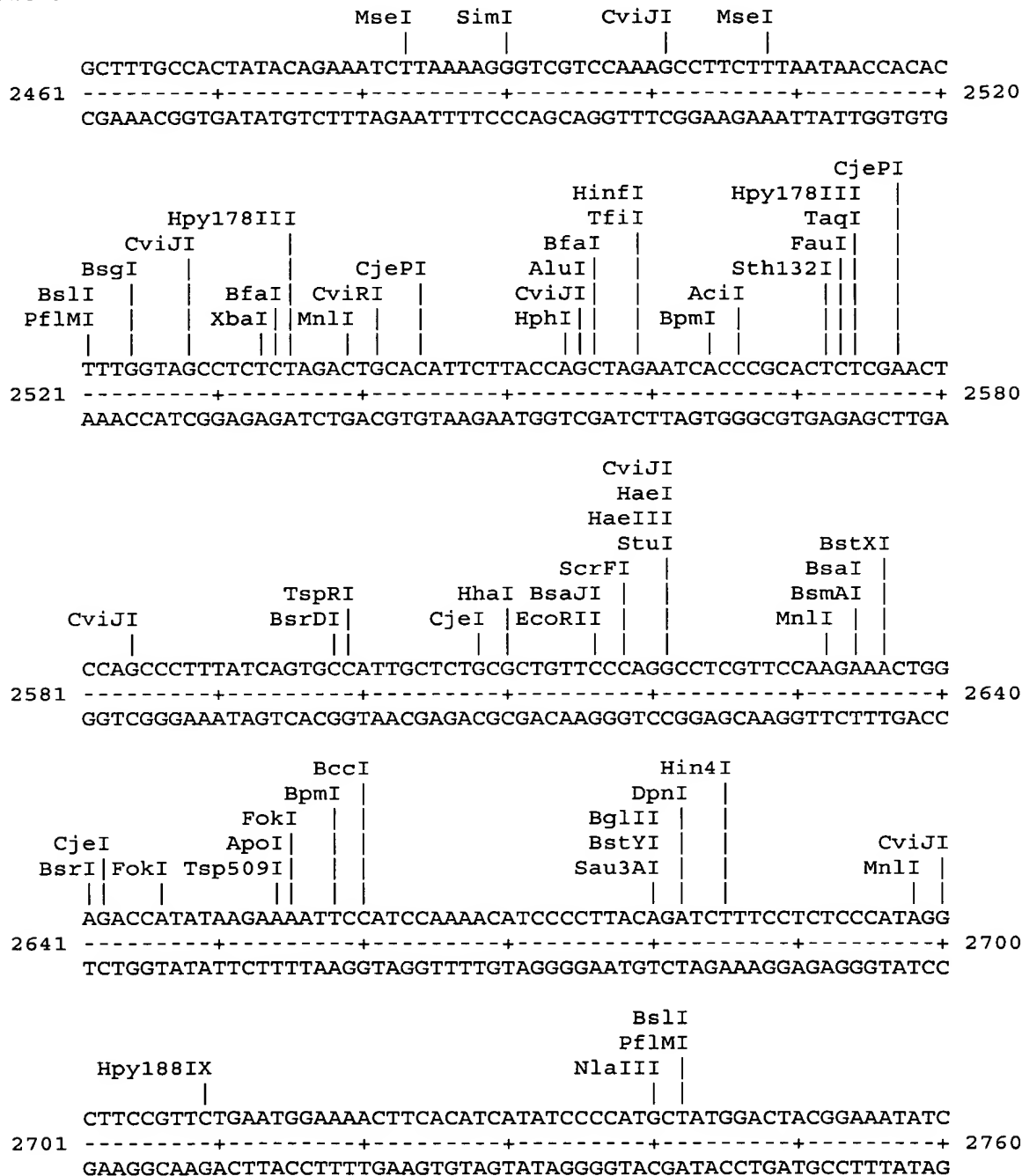
 RsaI MnlI PleI CviRI HinfI RleAI BseRI TaqI MboII TaaI BsmAI
 2341 ATCTCCAAGTACGACTTCTCTCCCACTACTTGCAGGACTCCGCTTCGACAGTCTCT
 -----+-----+-----+-----+-----+-----+-----+-----+-----+-----+ 2400
 TAGAGGTTTCATGCTGAAGGAGGGTGTTGATGAAACGTCCTGAGGCGAAGCTGTCAGAGGA

 Hin4I MnlI EarI BslI BsmFI SfcI CviJI AvrII BsaJI StyI BfaI HphI AluI CviJI DpnI Sau3AI NdeI
 2401 CTTCAAGGACTTCATCTCTACAGGGCTATCCCTAGGTTATAGCTACGGAGATCACCATAT
 -----+-----+-----+-----+-----+-----+-----+-----+-----+-----+ 2460
 GAAGTCCCTGAAGTAGAGATGTCCCGATAGGGATCCAATATCGATGCCTCTAGTGGGTATA



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Inventor(s): Andrew D. MURDIN et al.
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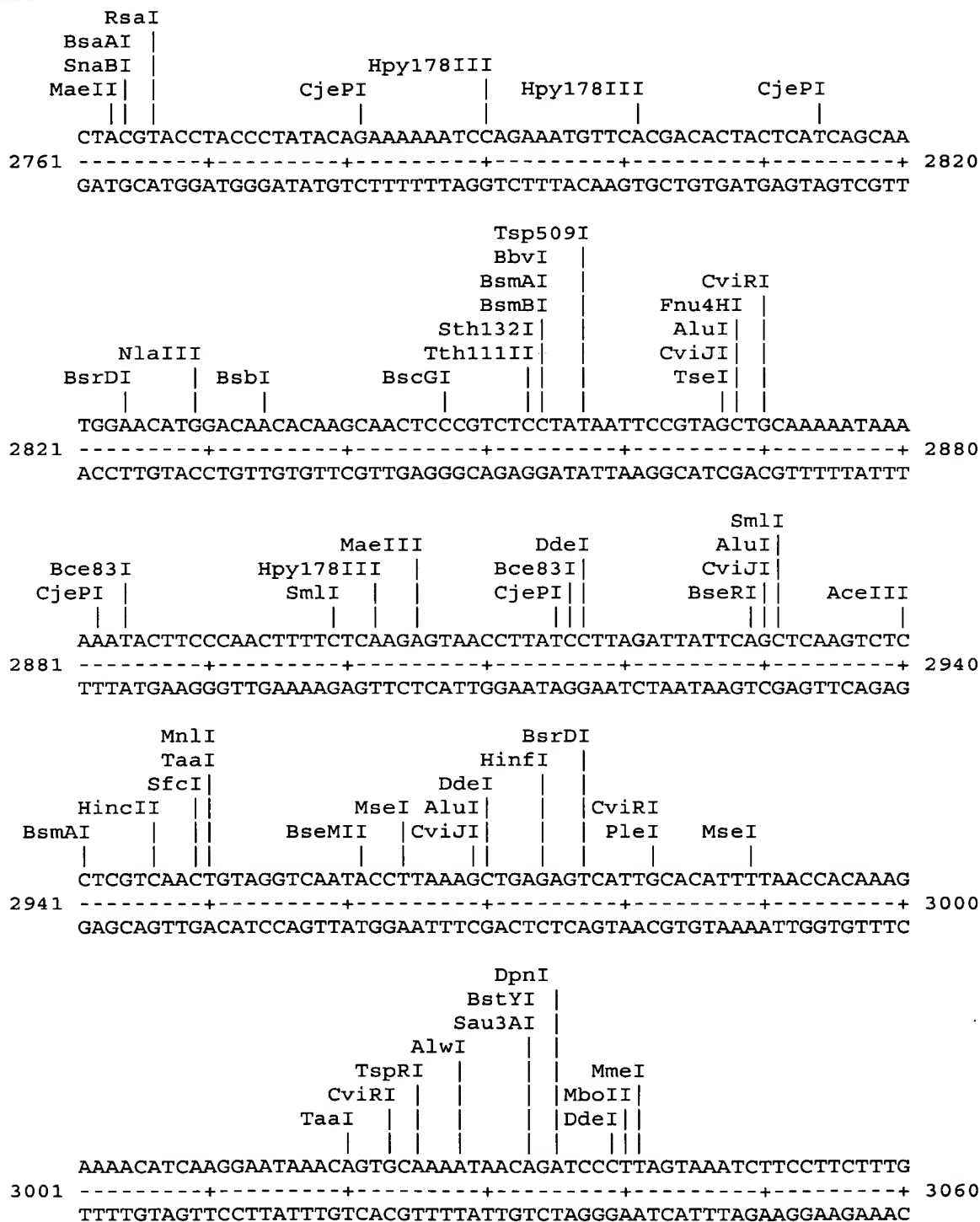
Figure 9K





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Figure 9L





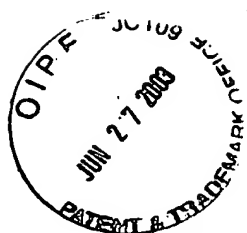
Title: Chlamydia Antigens and
Corresponding DNA Fragments and Uses
Thereof
Inventor(s): Andrew D. MURDIN et al.
Appl. No.: 09/868,987

Figure 9M

```

      Tsp509I
      MseI
      CviJI
      NgoGV
      NlaIV
      ||
TTGGAGCCTTAATTTTAGGTAAACTACAATA
3061 -----+-----+-----+----- 3092
AACCTCGGAATTAAAATCCATTTTGATGTTAT

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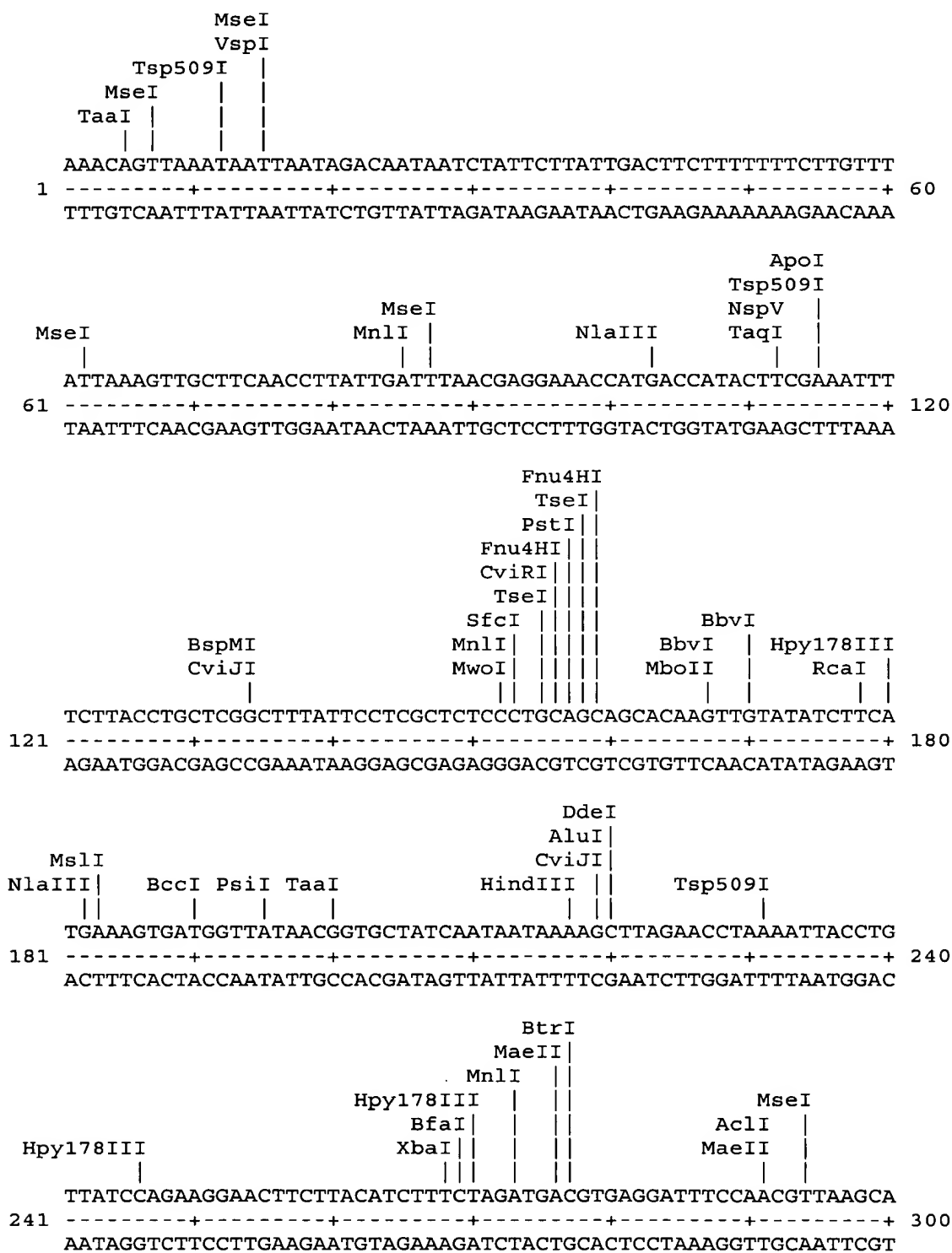
Title: Chlamydia Antigens and
Corresponding DNA Fragments and Uses
Thereof

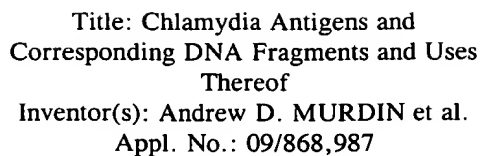
Inventor(s): Andrew D. MURDIN et al.

Appl. No.: 09/868,987

Figure 10A

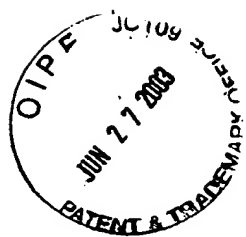
Restriction enzyme analysis of CPN100633 (RY 65 - SEQ ID NO. 10)





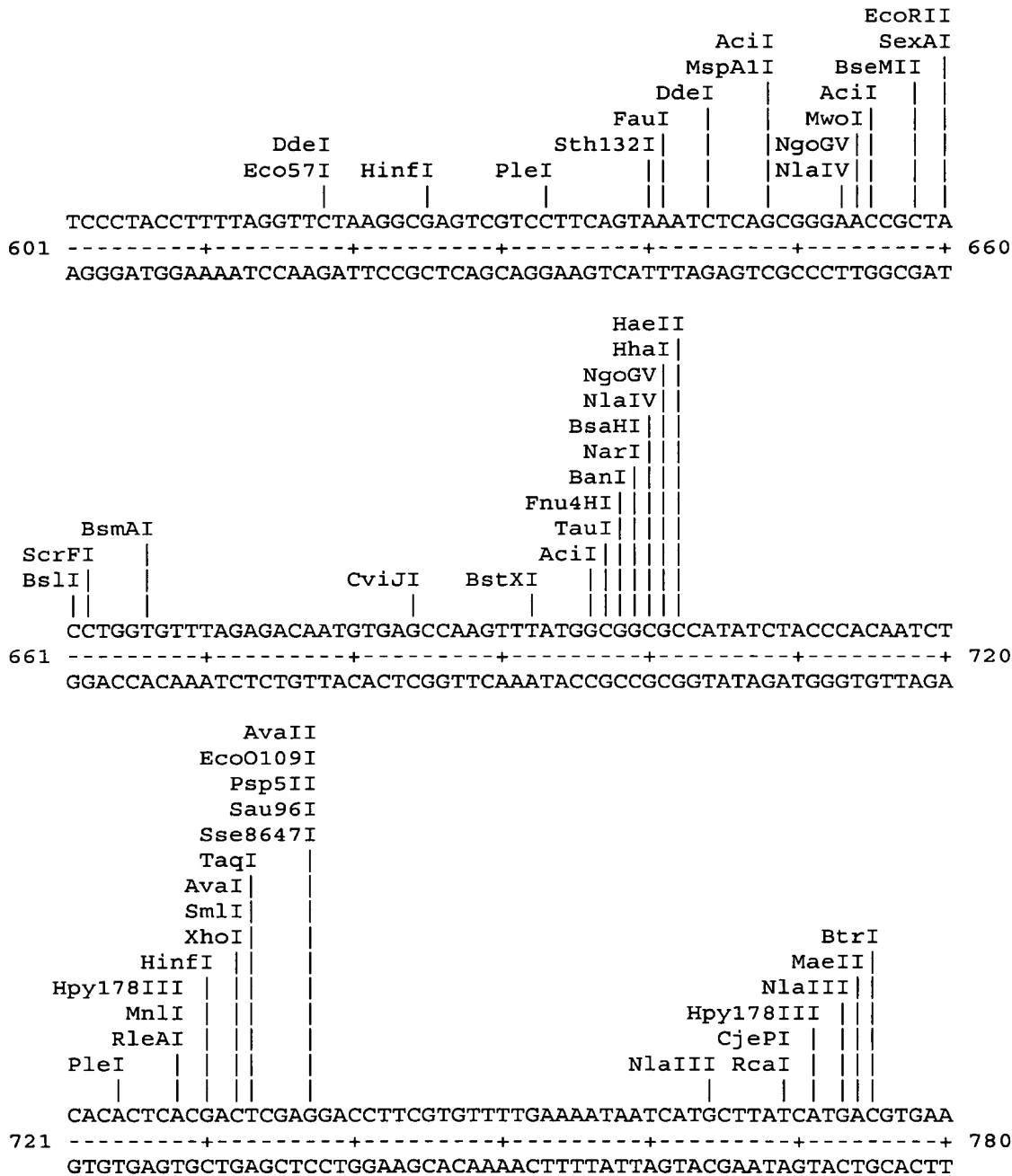
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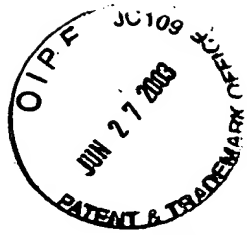
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 DpnI
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 BclI
 Sau3AI
 SfaNI
 DpnI
 Sau3AI
 ClaI
 HinfI
 TfiI
 NlaIII
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 MboII
 PsiI
 TaqI
 301
 TGATCAAGAAGATGCTGGGGTTTTATAAATCGATCTGGGAATCTTTTTTTCATGGGCAA
 360
 ACTAGTTCTTCTACGACCCCAAAAATATTTAGCTAGACCTTAGAAAAAAGTACCCGTT
 CviRI
 BstAPI
 MwoI
 TaaI
 BbvI
 BsaJI
 MnlI
 CjePI
 Fnu4HI
 HaeII
 HhaI
 TaqII
 TseI
 NspV
 TaqI
 361
 CCGTTGCAACTTCACTTTTTACAACTTATGACCGAGGGTTTTGGCGCTGCCATTTTCGAA
 420
 GGCAACGTTGAAGTGAAAAGTGTGGAATACTGGCTCCCAAACCGCGACGGTAAAGCTT
 CjePI
 BsmAI
 ThaI
 AciI
 CjePI
 Tsp509I
 CjePI
 DdeI
 HphI
 Bce83I
 BbvCI
 Bpu10I
 DdeI
 421
 CCGCGTTGGAGACACCACTCTCACTCTCTCTAATTTTTCTTACTTAGCGTTCACCTCAGC
 480
 GGCGCAACCTCTGTGGTGAGAGTGAGAGAGATTAAAAAGAATGAATCGCAAGTGGAGTCG
 MnlI
 SmlI
 BseMII
 MnlI
 MnlI
 HaeIV
 Hin4I
 NgoGV
 NlaIV
 DrdII
 Sau3AI
 MnlI
 TaqI
 DpnI
 481
 ACCTCTACTACCTCAAGGACAAGGAGCGATTATAGTCTTGGTTCCGTGATGATCGAAAA
 540
 TGGAGATGATGGAGTTCCTGTTCCTCGCTAAATATCAGAACCAAGGCACTACTAGCTTTT
 MaeIII
 RleAI
 Tsp45I
 Bsp24I
 CjeI
 CjePI
 CjeI
 MboII
 CjeI
 AceIII
 CjeI
 CjePI
 CjePI
 EarI
 Bsp24I
 BbvI
 TseI
 Fnu4HI
 AluI
 CviJI
 TseI
 Hin4I
 CjeI
 541
 TAGTGAGGAAGTGACTTTCTGTGGAACTACTCTTCGTGGAGTGGAGCTGCGATTTATAC
 600
 ATCACTCCTTCACTGAAAGACACCCTTGATGAGAAGCACCTCACCTCGACGCTAAATATG



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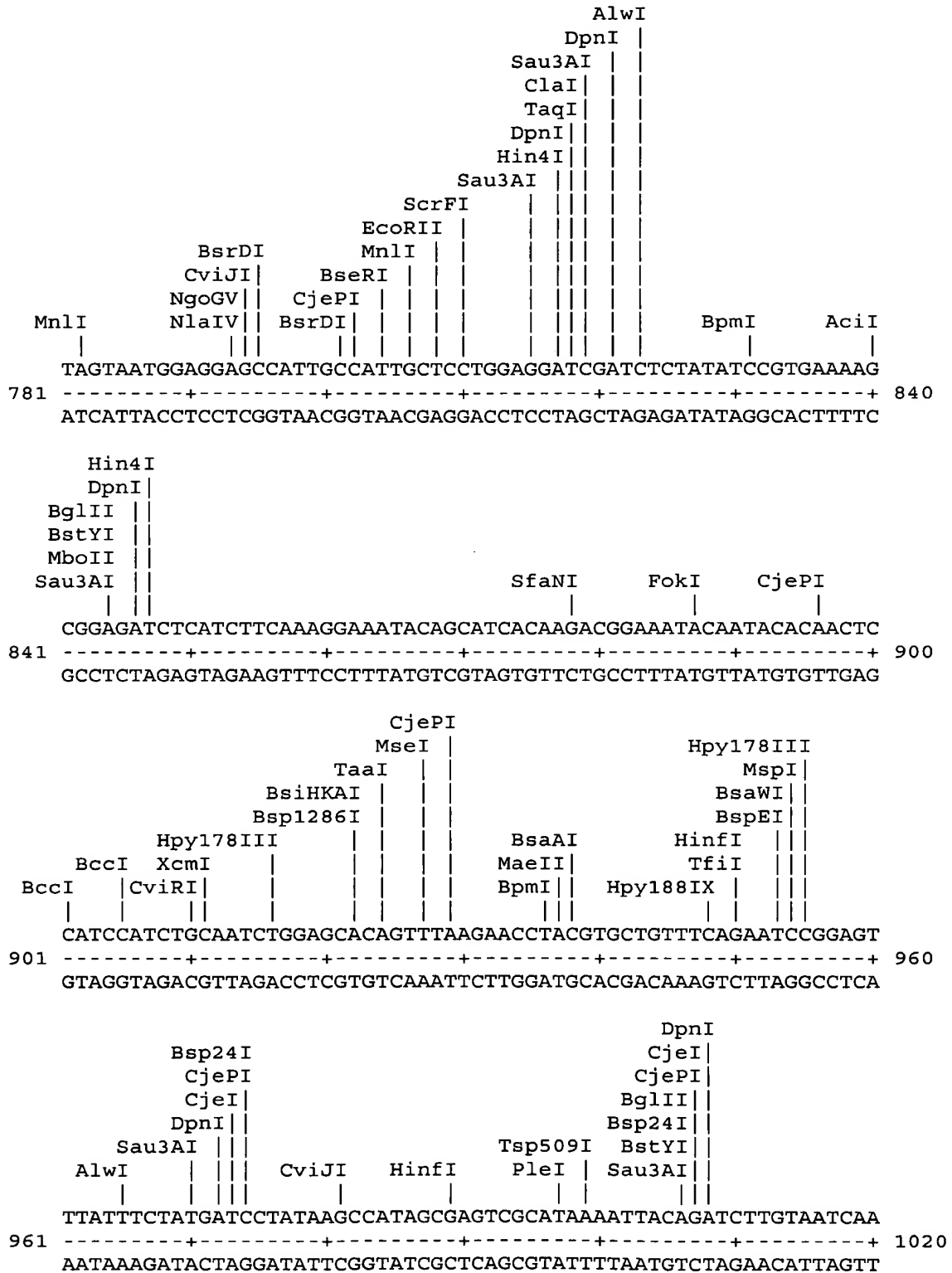
Figure 10C





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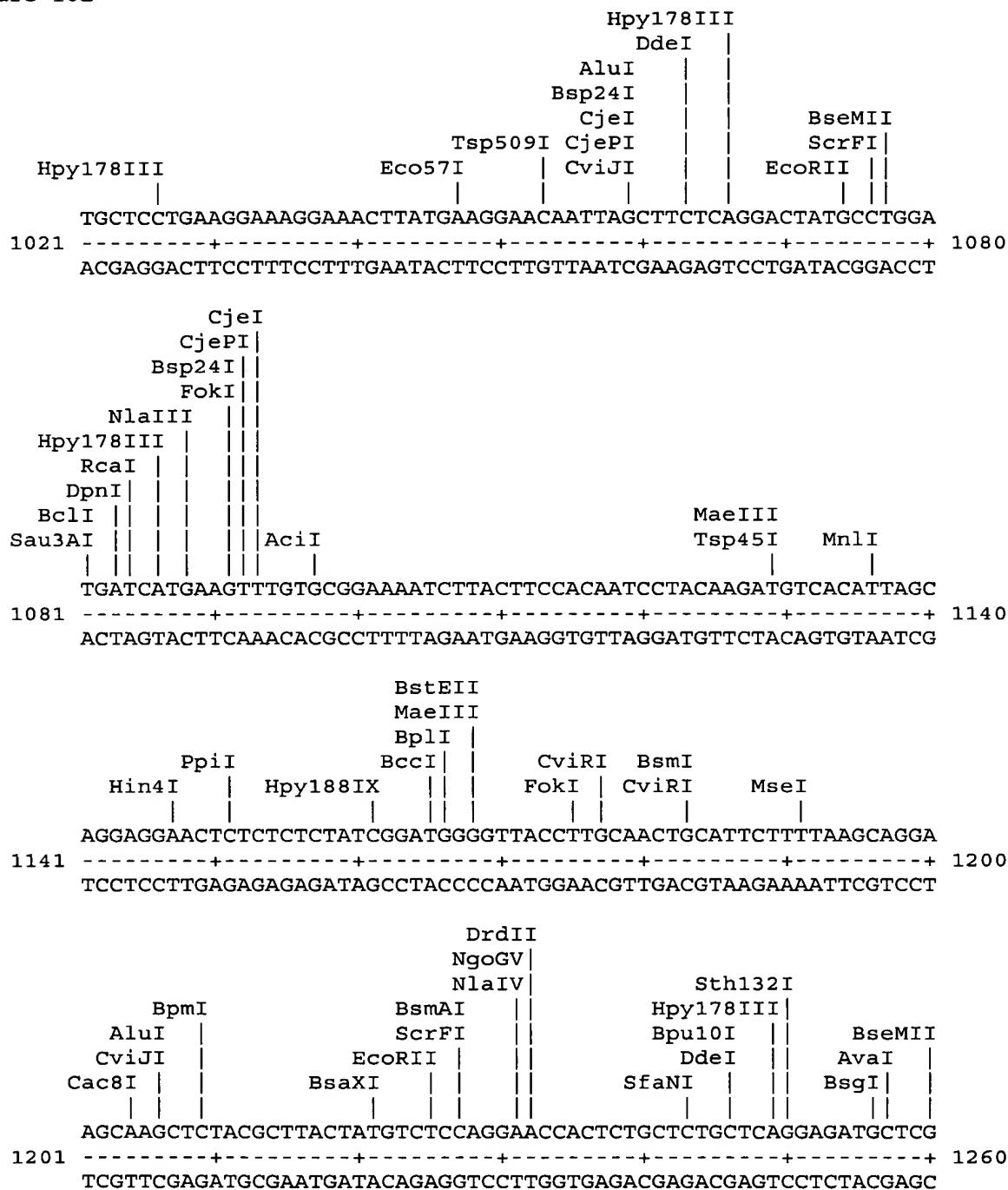
Figure 10D

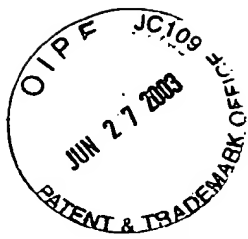




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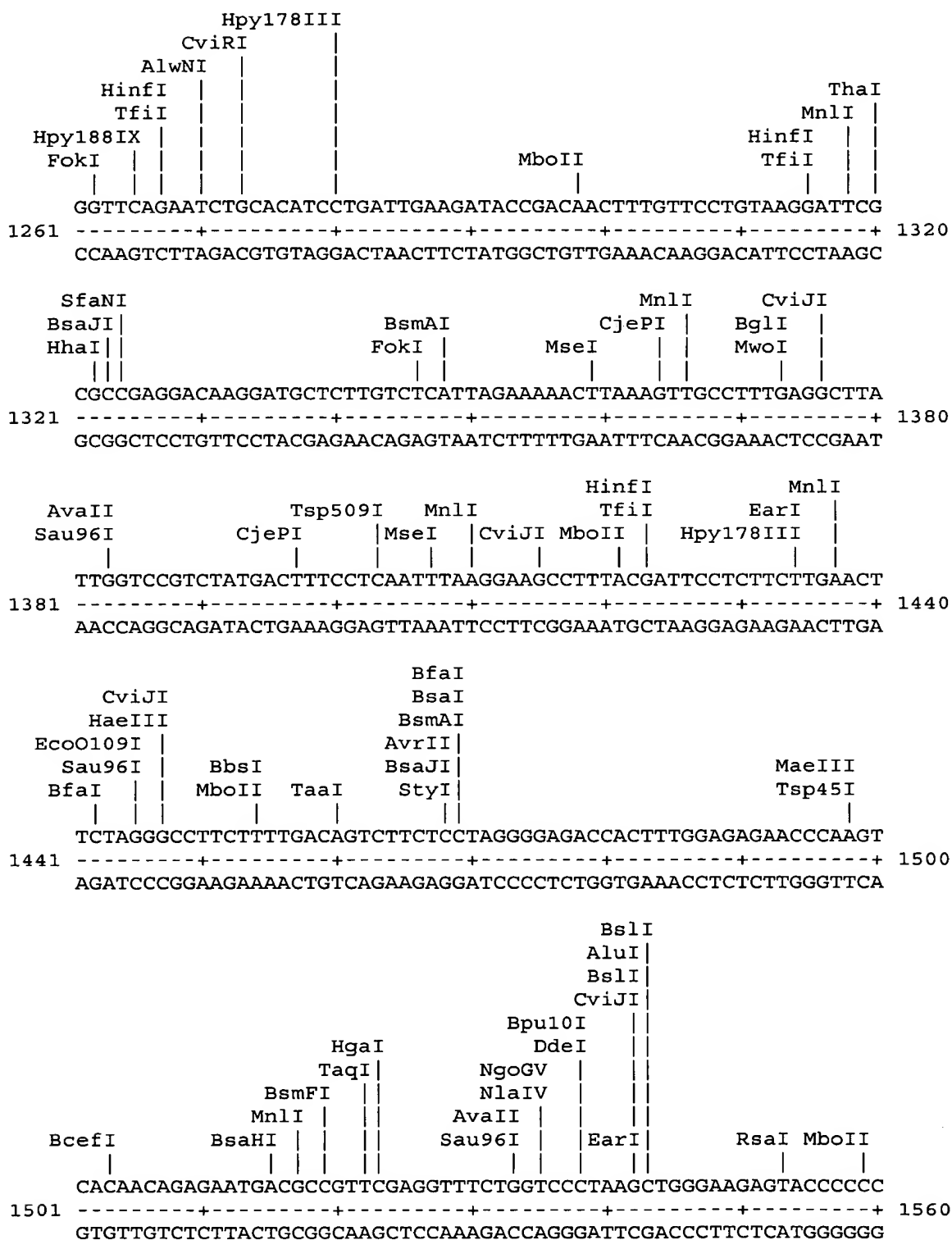
Figure 10E

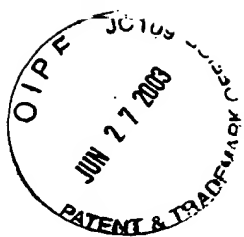




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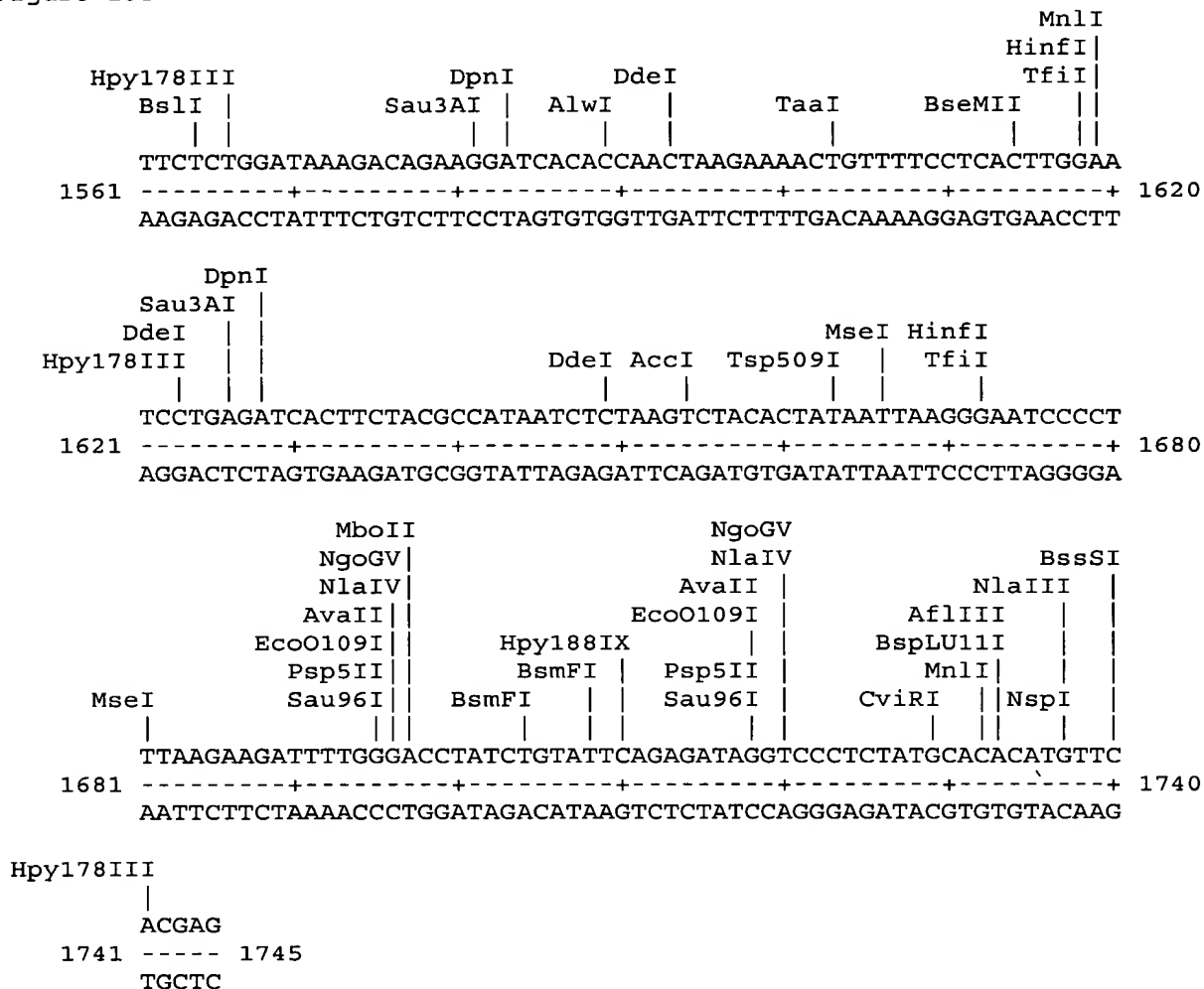
Figure 10F

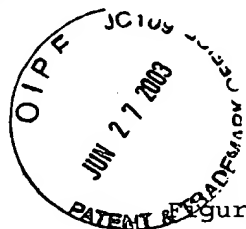




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Figure 10G





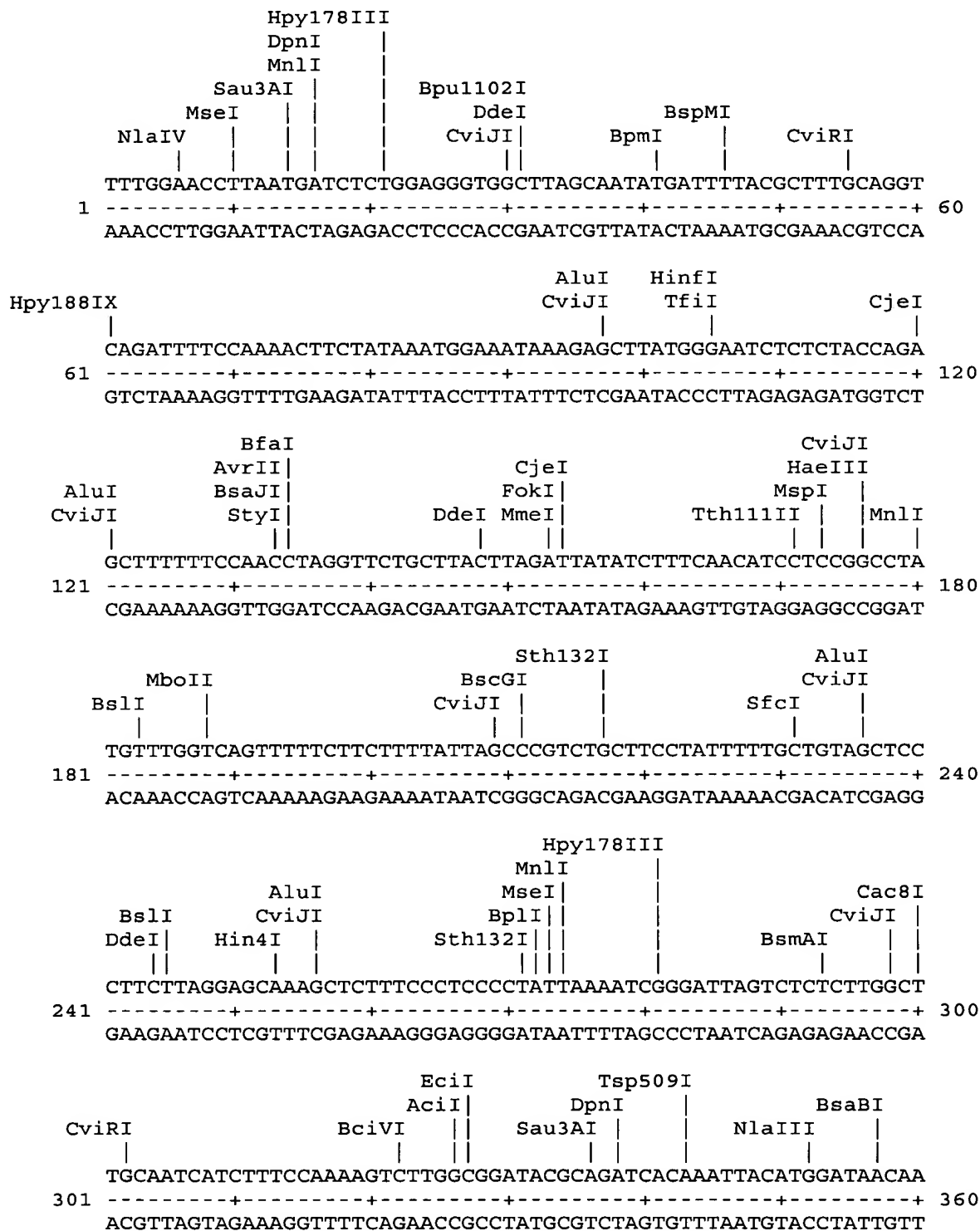
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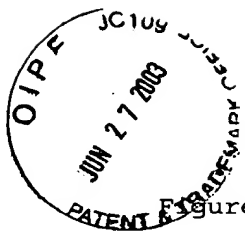
Inventor(s): Andrew D. MURDIN et al.

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Figure 11A

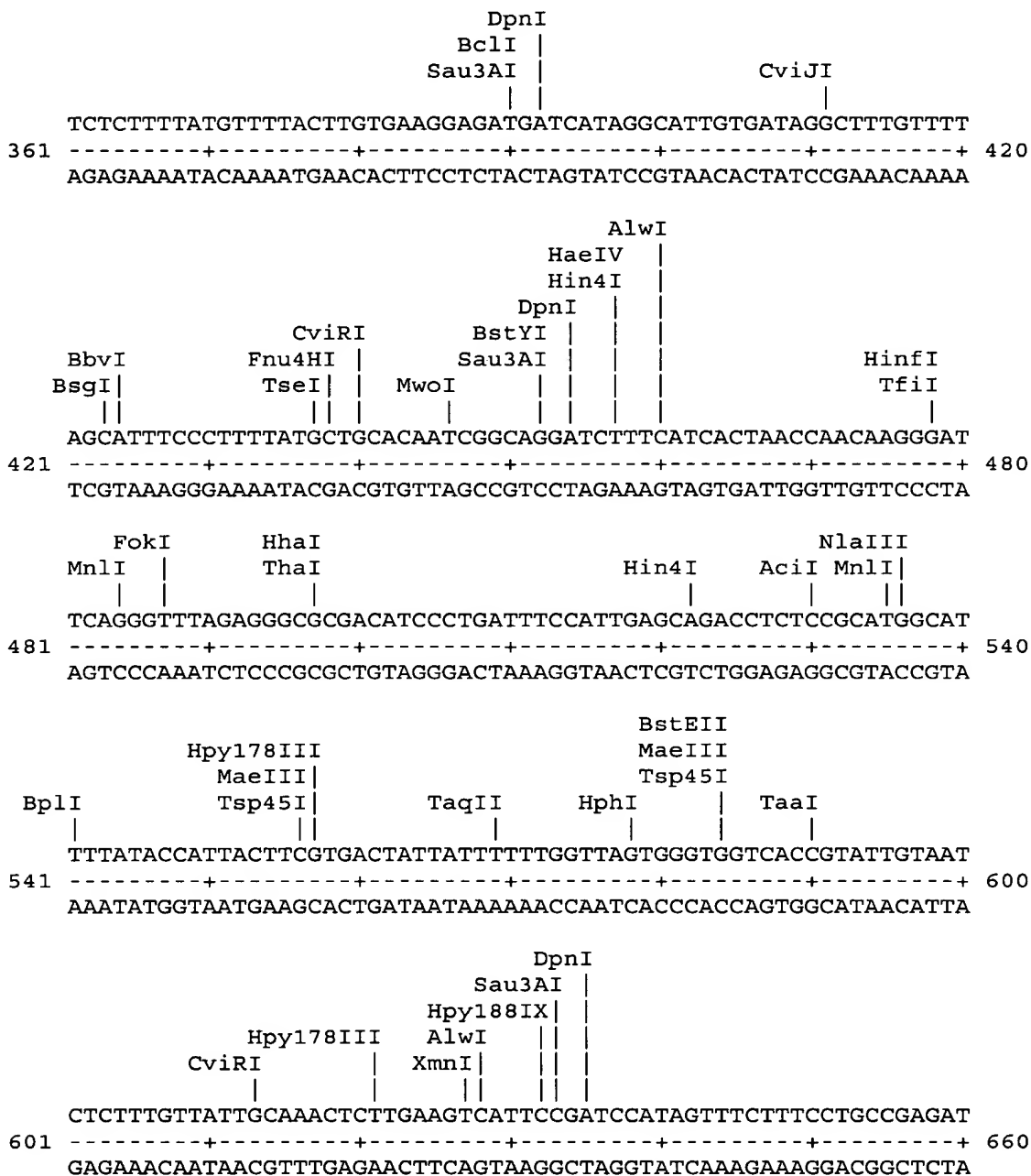
Restriction enzyme analysis of CPN100985 (RY 66 - SEQ ID NO. 11)

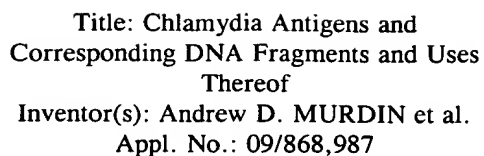


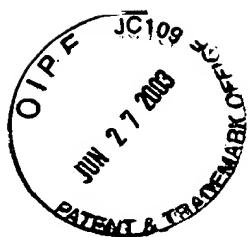


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Figure 11B

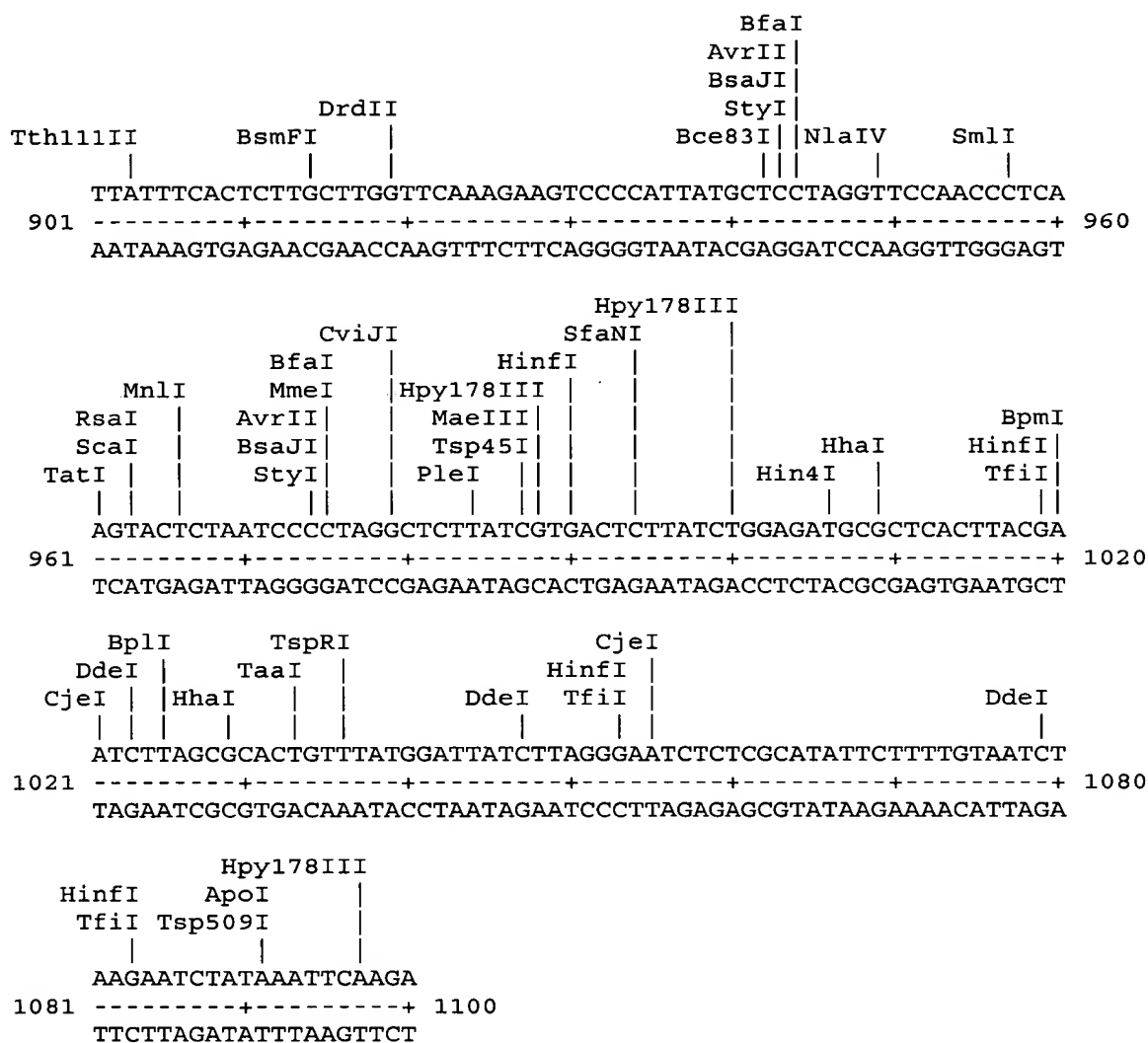


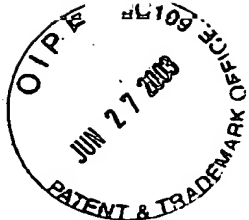
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Figure 11D

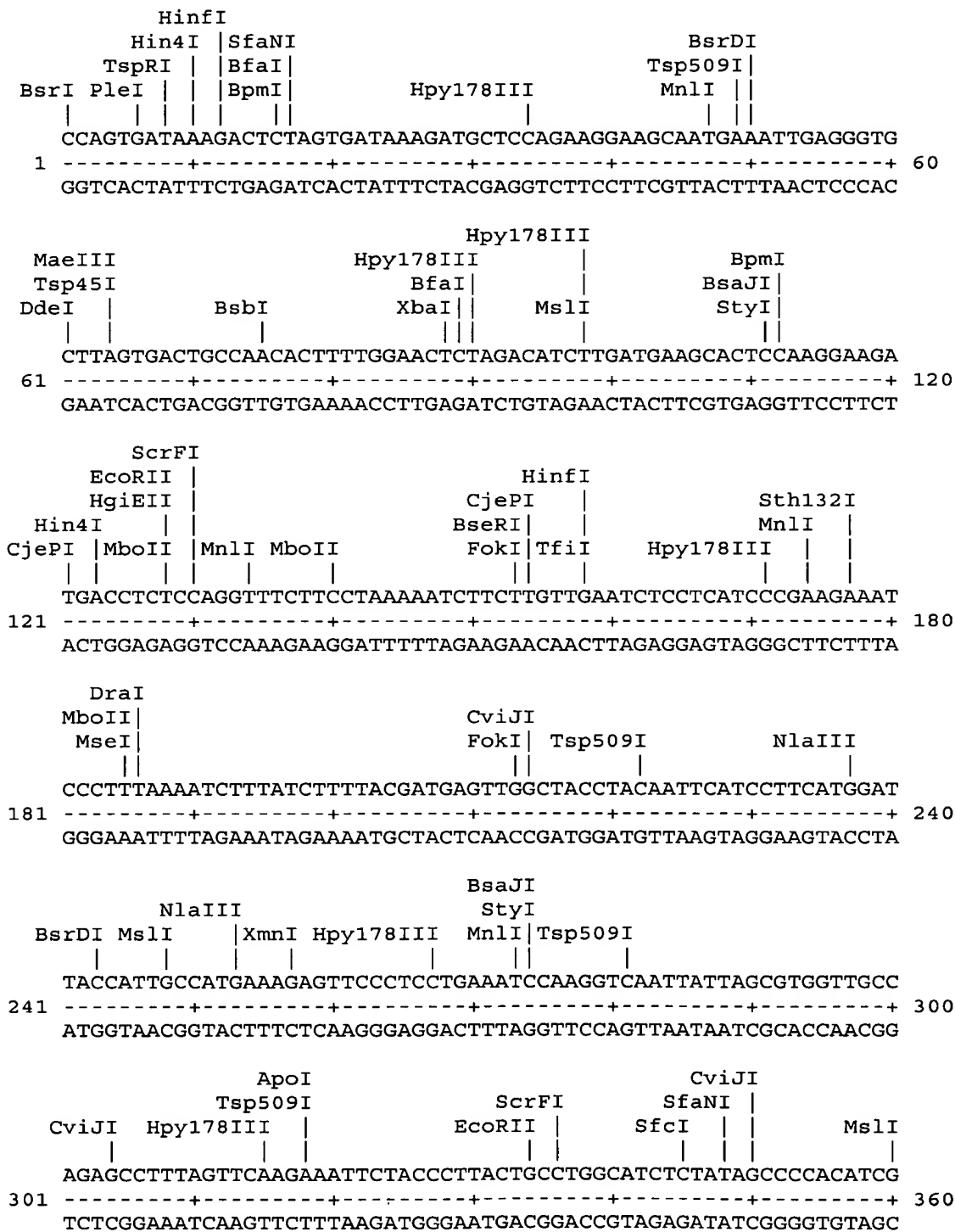


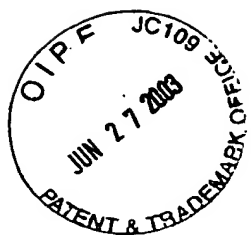


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Figure 12A

Restriction enzyme analysis of CPN100987 (RY 67 - SEQ ID NO. 12)

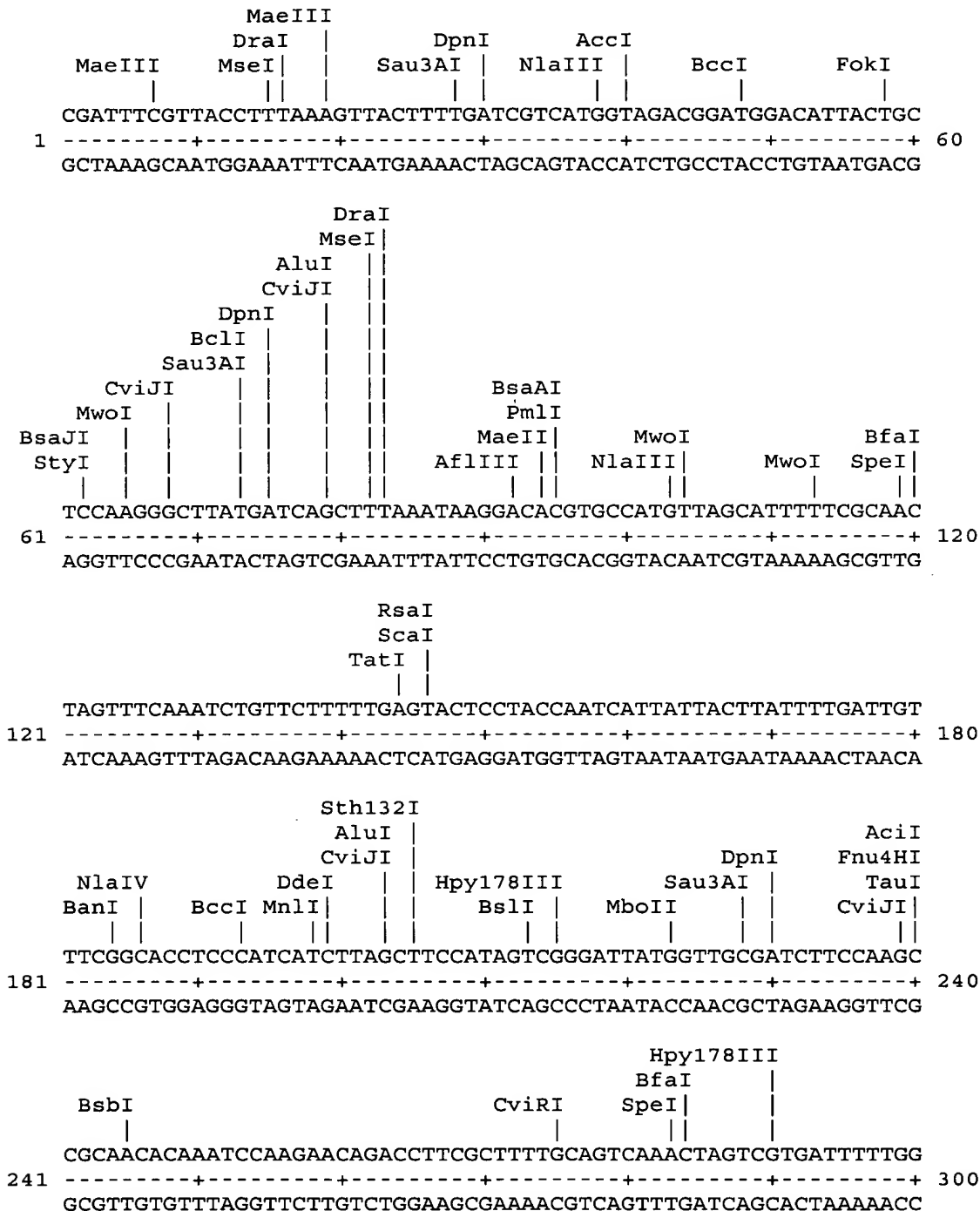




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Figure 13A

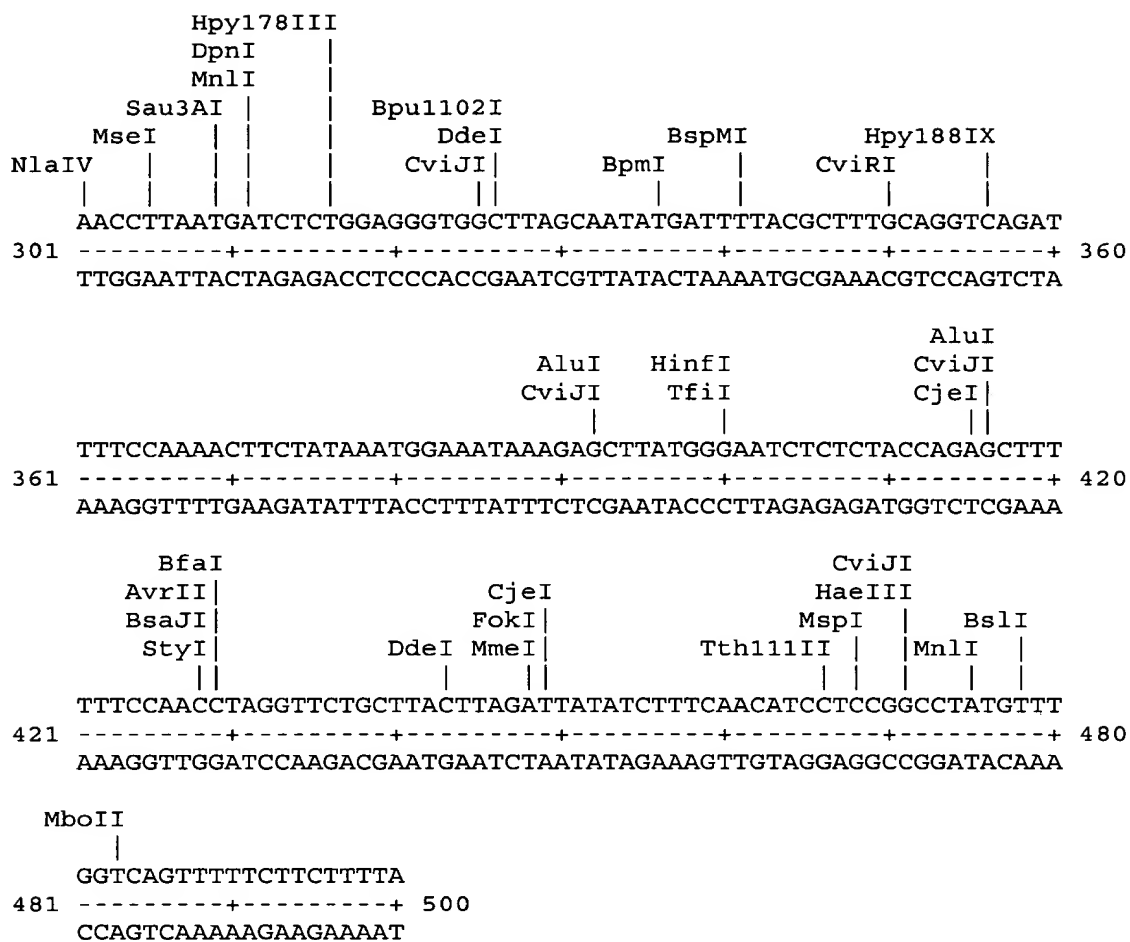
Restriction enzyme analysis of CPN100988 (ry68 - SEQ ID NO. 13)

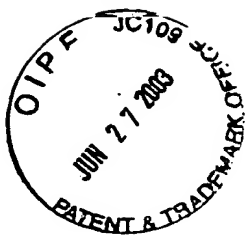




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Figure 13B





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Figure 14: Identification of T- and B-cell epitopes from the amino acid sequences SEQ ID No. 14; ORF: cpn100686

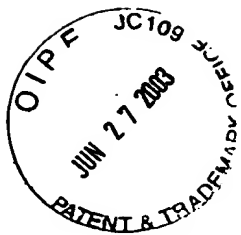
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1 MVSSPILNVP LKNHASVSGK FTHREVSKLA SDLKSGAMSF VPEVLSEETI
51 SSDLGKKQCT QGIISACCGL AMLIVLMSVY YRFGGVIASG AVLLNLLLIW
101 AALQYLDAPL TLSGLAGIVL AMGMAVDANV LVFERIREEF LLSQSLKKSV
151 EKGYTKAFGA IFDSNLTTVL ASALLFFLDL GPIKGFALTL ILGIFSSMFT
201 ALFMTKFFFM LWMNKTQHTQ LHMMNKFVGI KHDFLRGCKK LWAVSGSVFL
251 LGCVALGFGA WNSVLGMDFK GGYAFTFNPK EHGSDVAQM RGKVVKHLQE
301 AGLSSRDFRI QTFGSSEKIK IYFSDKALSY TKQIRASLLK LTIMSWRYCG
351 IVVRNRPRFL YGNSKRNAKF WSKVSSKLSK KMRYQATIGL LGALAIILLY
401 VSLRFEWQYA FSAVCALIHD LLATCAVLFI AHFFLKKIQL DLQAIGALMT
451 VLGYSLNNTL IIFDRIREDR QANLFTPMHV LVNDALQKTF SRTVMTTATT
501 LSVLLMLLLFI GGSSVFNFAP IMTIGILLGT LSSLYIAPPL LLFMVRKENR
551 SK
```

Possible T cell epitope:

427 VLFIAHFFL

Possible B cell epitope:

465 RIREDRQAN



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Figure 15: Identification of T- and B-cell epitopes from the amino acid
sequences SEQ ID No. 15; ORF: cpn100696

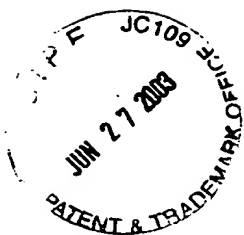
1 MSSNLHPVGG TGTGAAAPES VLNIVEEIAA SGSVTAGLQA ITSSPGMVNL
51 LIGWAKTKFI QPIRESKLFQ SRACQITLLV LGILLVVAGL ACMFIFHSQ
101 GANAFWLIIP AAIGLIKLLV TSLCFDEACT SEKLMVFQKW AGVLEDQLDD
151 GILNNSNKIF GHVKTEGNTS RATTPVLNDG RGTPVLSPLV SKIARV

Possible T cell epitope:

133 KLMVFQKWA

Possible B cell epitope:

163: VKTEGNTSRAT



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Figure 16: Identification of T- and B-cell epitopes from the amino acid sequences SEQ ID No. 16; ORF: cpn100709

1 MTIRILAEGL AFRYGSKGPN IIHDVSFSVY DGDFIGIIGP NGGGKSTLTM
51 LILGLLTPTF GSLKTFPSHS AGKQTHSMIG WVPQHFSYDP CFPISVKDVV
101 LSGRLSQLSW HGKYKKKDFE AVDHALDLVG LSDTTTTAFA HLSGGQIQRV
151 LLARALASYP EILILDEPTT NIDPDNQORI LSILKKLNRT CTILMVTHDL
201 HHTTNYFNKV FYMNKTLHFI GRHFDLNRPI LLSSYKNQEF SCSPH

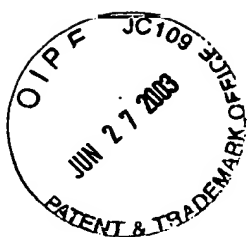
Possible T cell epitope:

212 YMNKTLHFI

Possible B cell epitopes:

109 SWHGKYKKKDFE

166 DEPTTNIDPDNQQR



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Figure 17: Identification of T- and B-cell epitopes from the amino acid sequences SEQ ID No. 17; ORF: cpn100710

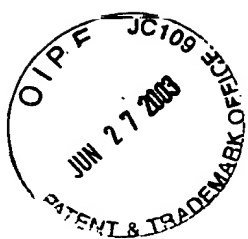
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1  MHKVIVFIFL  TLYSLKSYGN  DVIDKPHVLV  SIAPYKFLVE  QIAEETCFVY
51 AIVTNHYDPH  TYELPPQQIK  ELRQGDWFR  IGEAFGKNLL  EKPVMQQVDL
101 SQNVSLIQGK  PCCNQHTTNY  DTHTWLSPKN  LKVQVETIVT  TLSKKYPQHA
151 TLYQSNGEKL  LLALDQLNEE  ILTITSKAKQ  RHILVSHGAF  GYFCRDYNFS
201 QHTIEKSSHV  EPSPKDVARV  FRDIEQYKIS  SVILLEYSGR  RSSAMLADRF
251 HMHTVNLDPY  AENVLVNLKT  IATTFSSL
```

Possible T cell epitope:

125 WLSPKNLKV

Possible B cell epitope:

55 NHYDPHTYELPPQQIKELRQGD



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Figure 18: Identification of T- and B-cell epitopes from the amino acid sequences SEQ ID No. 18; ORF: cpn100711

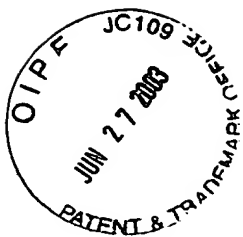
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1  MGPGSVLSNH SKEAGGIAIN NVIIDFSEIV PTKDNATVAP PTLKLVSRTN
51 ADSKDKIDIT GTVTLLDPNG NLYQNSYLGE DRDITLFDNID NSASGAVTAT
101 NVTLQGNLGA KKGYLGTWNL DPNSSGSKII LKWTFDKYLR WPYIPRDNHF
151 YINSIWGAQN SLVTVNQGIL GNMLNNARFE DPAFNNFWAS AIGSFLRKEV
201 SRNSDSFTYH GRGYTAAVDA KPRQEFILGA AFSQVFGHAE SEYHLDNYKH
251 KSGHSTQAS LYAGNIFYFP AIRSRPILFQ GVATYGYMQH DTTYYPSTIE
301 EKNMANWDSI AWLFDLRFSV DLKEPQPHST ARLTFYTEAE YTRIRQEKFT
351 ELDYDPRSFS ACSYGNLAIP TGFSVDGALA WREIILYNKV SAAYLPVILR
401 NNPKATYEV LSTKEKGNVVN VLPTRNAARA EVSSQIYLG S YWTLYGTYTI
451 DASMNTLVQM ANGGIRFVF
```

Possible T cell epitope:

312 WLFDLRFSV

Possible B cell epitope:

240: ESEYHLDNYKHKSGHST



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Figure 19: Identification of T- and B-cell epitopes from the amino acid sequences SEQ ID No. 19; ORF: cpn100877

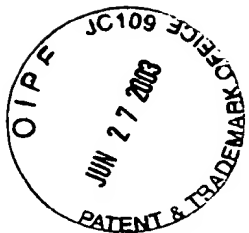
1	MRFSLCGFPL	VFSFTLLSVF	DTSLSATTIS	LTPEDSFHGD	SQNAERSYNV
51	QAGDVYSLTG	DVSI SNVDNS	ALNKACFNVT	SGSVTFAGNH	HGLYFNMISS
101	GTTKEGAVLC	CQDPQATARF	SGFSTLSFIQ	SPGDIKEQGC	LYSKNALMLL
151	NNYVVRFEQN	QSKTKGGAIS	GANVTIVGNY	DSVSFYQNAA	TFGGAIHSSG
201	PLQIAVNQAE	IRFAQNTAKN	GSGGALYSDG	DIDIDQNAYV	LFRENEALTT
251	AIGKGGAVCC	LPTSGSSTPV	PIVTFSDNKQ	LVFERNHSIM	GGGAIYARKL
301	SISSGGPTLF	INNISYANSQ	NLGGAI AIDT	GGEISLSAEK	GTITFQGNRT
351	SLPFLNGIHL	LQNAKFLKLQ	ARNGYSIEFY	DPITSEADGS	TQLNINGDPK
401	NKEYTG TILF	SGEKSLANDP	RDFKSTIPQN	VNLSAGYLVI	KEGAEVTVSK
451	FTQSPGSHLV	LDLGTKLIAS	KEDIAITGLA	IDIDSLSSSS	TAAVIKANTA
501	NKQISVTDSI	ELISPTGNAY	EDLRMRNSQT	FPLLSLEPGA	GGSVTVTAGD
551	FLPVSPHYGF	QGNWKLAWTG	TGNKVGEFFW	DKINYKPRPE	KEGNLVPNIL
601	WGNAVDVRSL	MQVQETHASS	LQTDRLWID	GIGNFFHVSA	SEDNIRYRHN
651	SGGYVLSVNN	EITPKHYTSM	AFSQLFSRDK	DYAVSNNEYR	MYLGSYLYQY
701	TTSLGNIFRY	ASRNPVNVVG	ILSRRFLQNP	LMIFHFLCAY	GHATNDMKTD
751	YANFPMVKNS	WRNNCWAIEC	GGSMPLLVFE	NGRLFQGAIP	FMKLQLVYAY
801	HGDFKETTAD	GRRFSNGSLT	SISVPLGIRF	EKLALSQDVL	YDFSFSYIPD
851	IFRKDPSCEA	ALVISGDSWL	VPAAHVSRHA	FVGSGTGRYH	FNDYTELLCR
901	GSIECRPHAR	NYNINCGSKF	RF		

Possible T cell epitope:

146 ALMLLNYYV

Possible B cell epitope:

581 DKINYKPRPEKEG



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Figure 20: Identification of T- and B-cell epitopes from the amino acid sequences SEQ ID No. 20; ORF: CPN100325

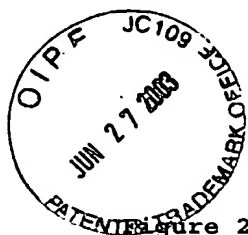
1	MPSSWKRLQ	VLCHKIAATE	SGGGIYAKDI	QLQALPGSFT	ITDNKVETSL
51	TTSTNLYGGG	IYSSGAVTLT	NISGTFGITG	NSVINTATSQ	DADIQGGGIY
101	ATTSLSINQC	NTPILFSNNS	AATKKTSTTK	QIAGGAIFSA	AVTIENNSQP
151	IIFLNNSAKS	EATTAATAGN	KDSCGGAIAA	NSVTLTNPE	ITFKGNYAET
201	GGAIGCIDLT	NGSPPRKVS	ADNGSVLFQD	NSALNRGGAI	YGETIDISRT
251	GATFIGNSSK	HDGSAICCST	ALT LAPNSQL	IFENNKVTET	TATTKASINN
301	LGAAIYGNNE	TSDVTISLSA	ENGSIFFKNN	LCTATNKYCS	IAGNVKFTAI
351	EASAGKAISF	YDAVNVPPKK	QLLKS		

Possible T cell epitope:

226 VLFQDNSAL

Possible B cell epitope:

257 NSSKHDG



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Figure 21: Identification of T- and B-cell epitopes from the amino acid
sequences SEQ ID No. 21; ORF: CPN100368

1	MKYSLPWLLT	SSALVFSLHP	LMAANTDLSS	SDNYENGSSG	SAAFTAKETS
51	DASGTTYTLT	SDVSITNVSA	ITPADKSCFT	NTGGALSFVG	ADHSLVLQTI
101	ALTHDGAAIN	NTNTALSFSG	FSSLLIDSAP	ATGTSGGKGA	ICVTNTEGGT
151	ATFTDNASVT	LQKNTSEKDG	AAVSAYSIDL	AKTTTAALLD	QNTSTKNGGA
201	LCSTANTTVQ	GNSGTVTFSS	NTATDKGGGI	YSKEKDSTLD	ANTGVVTFKS
251	NTAKTGGAWS	SDDNLALTGN	TQVLFQENKT	TGSAAQANNP	EGCGGAICCY
301	LATATDKTGL	AISQNQEMSF	TSNTTTANGG	AIYATKCTLD	GNTTLTFDQN
351	TATAGCGGAI	YTETEDFSLK	GSTGTVTFST	NTAKTGGALY	SKGNSSLTGN
401	TNLLFSGNKA	TGPSNSSANQ	EGCGGAILAF	IDSGSVSDKT	GLSIANNQEV
451	SLTSNAATVS	GGAIYATKCT	LTGNGSLTFD	GNTAGTSGGA	IYTETEDFTL
501	TGSTGTVTFS	TNTAKTGGAL	YSKGNNLSLG	NTNLLFSGNK	ATGPSNSSAN
551	QEGCGGAILS	FLESASVSTK	KGLWIEDNEN	VLSGNTATV	SGGAIYATKC
601	ALHGNTTLTF	DGNTAETAGG	AIYTETEDFT	LTGSTGTVTF	STNTAKTAGA
651	LHTKGNTSFT	KNKALVFSGN	SATATATTTT	DQEGCGGAIL	CNISESDIAT
701	KSLTLTENES	LSFINNTAKR	SGGGIYAPKC	VISGSESINF	DGNTAETSGG
751	AIYSKNLSIT	ANGPVSFTNN	SGGKGGAIYI	ADSGELSLEA	IDGDITFSGN
801	RATEGTSTPN	SIHLGARGKI	TKLAAAPGHT	IYFYDPITME	APASGGTIEE
851	LVINPVVKAI	VPPPQPKNGP	I		

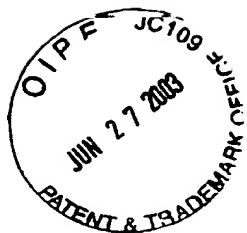
Possible T cell epitope:

7 WLLTSSALV

Possible B cell epitopes:

162 QKNTSEKDG

538 GNKATGPSNSSANQEG



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Figure 22: Identification of T- and B-cell epitopes from the amino acid sequences SEQ ID No. 22; ORF: CPN100624

```
1 MTNSIFISKF GCLCDPFVSA FYPTALCCSL SGNEVPNLAS CQMSRKDISA
51 FHTSPSFRLN VTPEPLVSSF RPSNLLNGFG HDITQDITIT GNSINSVIDY
101 NYHYEDGGIL ACKNLFISEN KGNLSFERN SSSGGALYS VRECWISKNQ
151 NYSFISNAAS LATTTTSGFG GAIHALDSYI TNNLGEGQFL DNVSKNRGGA
201 IYVGVSLSIT DNLGPIVIK NQTLEDSSF GGIFCRAVNI ERNYQNIQIN
251 DNASQGQVVY FLPLGVIISS NKEIIEISNH SASSINTASG KLYPGGGGIM
301 CTSLSHENNP KGLIFNNKTA ALSGGVYTRD LSSSKITVRT AFINNSATSG
351 GALINLSGIG STPQNFFLSA DYGDILFNNN TITSSSPQPG YRNALYAAPG
401 INLKLGARQG YKILFYDPID HDQTTTDPID FNYEPHHLGT VLFSGINVDS
451 NATNPLNFLS KFSNSSRLER GVLAIEDRAA ISCKTLSQTG GILRLGNAAL
501 IRTKGPSSSI NFNAIAINLP SILQSEASAP KFWIYPTLTG STYSEDTSST
551 ITLSGPLTFL NDENENPYDS LDLSEPRKDI PPPLPPRCDC KKIDTSNLIV
601 EAMNLDEHYG YQGIWSPYWM ETTTTSSTV PEQTNTNHRQ LYVDWTPVGY
651 RPNPERHGEF IANTLWQSAY NALLGIRILP PQNLKEHDLE ASLQGLGLLI
701 NQHNREGRKG FRNHTTGAA TTSAKTAARH SFSLGFAQMF SKTRERQSPS
751 TTSSHNYFAG LRFDSLFRD FISTGLSLGY SYGDHMLCH YTEILKGSSK
801 AFFNNHTLVA SLDCTFLPAR ITRTLELQPF ISAIALRCSQ ASFQETGDHI
851 RKFHFKHPLT DLSSPIGFRS EWKTSHHIPM LWTTEISYVP TLYRKNPEMF
901 TTLLISNGTW TTQATPVSYN SVAARIKNTS QLFSRVTLSL DYSAQVSSST
951 VGQYLKAESH CTF
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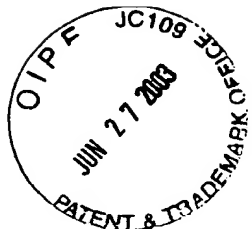
Possible T cell epitope:

640 QLYVDWTPV

Possible B cell epitopes:

701 NQHNREGRKGFRNHTTG

741 SKTRERQSPSTTSSHNY



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Figure 23: Identification of T- and B-cell epitopes from the amino acid sequences SEQ ID No. 23; ORF: CPN100633

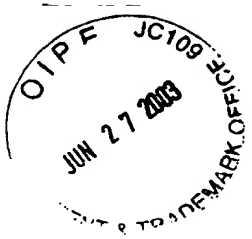
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1 MTILRNFLTC SALFLALPAA AQVVYLHESD GYNGAINNKS LEPKITCYPE
51 GTSYIFLDDV RISNVKHDQE DAGVFINRSG NLFFMGNRCN FTFHNLMTG
101 FGAAISNRVG DTTLTLSNFS YLAFTSAPLL PQGQGAIYSL GSVMIENSEE
151 VTFCGNYSSW SGAAIYTPYL LGSKASRPSV NLSGNRYLVF RDNVSQVYGG
201 AISTHNLTLT TRGPSCFENN HAYHDVNSNG GAIAIAPGGS ISISVKSGDL
251 IFKGNTASQD GNTIHNSIHL QSGAQFKNLR AVSESGVYFY DPISHSESHK
301 ITDLVINAPE GKETYEGTIS FSGLCLDDHE VCAENLTSTI LQDVTLAGGT
351 LSLSDGVTLQ LHSFKQEASS TLTMSPGTTL LCSGDARVQN LHILIEDTDN
401 FVPVRIRAED KDALVSLEKL KVAFEAYWSV YDFPQFKEAF TIPLLELLGP
451 SFDSLILLGET TLERTQVTTE NDAVRGFWSL SWEEYPPSLD KDRRITPTKK
501 TVFLTWNPEI TSTP
```

Possible T cell epitope:

640 QLYVDWTPV

Possible B cell epitope:

482 WEEYPPSLDKDRRITPTKK



Title: Chlamydia Antigens and
Corresponding DNA Fragments and Uses
Thereof

Inventor(s): Andrew D. MURDIN et al.
Appl. No.: 09/868,987

Figure 24: Identification of T- and B-cell epitopes from the amino acid sequences SEQ ID No. 24; ORF: cpn100985

```
1  MGISLPELFS  NLGSAYLDYI  FQHPPAYVWS  VFLLLLLARLL  PIFAVAPFLG
51 AKLFPSPIKI  GISLSWLAI  FPKVLADTQI  TNYMDNNLFY  VLLVKEMIIG
101 IVIGFVLAFP  FYAAQSAGSF  ITNQGGIQGL  EGATSLISIE  QTSPHGILYH
151 YFVTIIFWL  V  GGHRRIVISLL  LQTLEVIPIH  SFFPAEMMSL  SAPIWITMIK
201 MCQLCLVMTI  QLSAPAALAM  LMSDLFLGII  NRMAPQVQVI  YLLSALKAFM
251 GLLFLT LAW  W  FIIKQIDYFT  LAWFKEVPIM  LLGSNPQVL
```

Possible T cell epitope:

83 YMDNNLFYV

Possible B cell epitope:

78 TQITNYMDNN



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Appl. No.: 09/868,987

Figure 25: Identification of T- and B-cell epitopes from the amino acid sequences SEQ ID No. 25; ORF: cpn100987

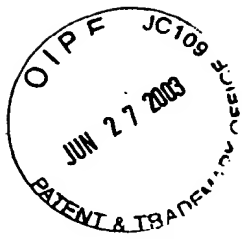
1 MKHSKEDDLS RFLPKNLLVE SPHP EEIPLK SLSFTMSWLP TIHPSWITIA
51 MKEFPPEIQG QLLAWLPEPL VQEILPLLPG ISIAPHRCAP FGAFYLLDML
101 SKKIRPCGIT EEIFLPASSA NAILYTGTPV KIALINCLGL YSIAKELKHI
151 LDKVVI ERVK NALSPTEKLF LTYCQSHPMK HLETTNFLSS WTTDAELRQF
201 VHKQGLEFLG KALTKENASF LWYFLRRLDV GRAYIVEQTL KTWYDHPYVD
251 YFKSRLEQCM KVLVK

Possible T cell epitope:

220 FLWYFLRRL

Possible B cell epitope:

1 MKHSKEDDLSR



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Corresponding DNA Fragments and Uses
Thereof
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Appl. No.: 09/868,987

Figure 26: Identification of T- and B-cell epitopes from the amino acid sequences SEQ ID No. 26; ORF: cpn100988

1 MLAFFATSEFK SVLFEYSYQS LLLILIVSAP PIILASIVGI MVAIFQAATQ
51 IQEQTFFAFV KLVVIFGTLM ISGGWLSNMI LRFAGQIFQN FYKWK

Possible T cell epitope:

21 LLLILIVSA

Possible B cell epitope:

89 QNFYKWK